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GENERAL NEWS SECTION.....

swered by reference to page and number of the rules. The application of this general observation to the railway situation is obvious, and its effect from the standpoint both of commercial business and of the railways is one that deserves most serious consideration. The Interstate Commerce Commission is rapidly developing into a bureaucracy, and, according to the lexicographers, a bureaucracy tends "to official interference in the private affairs of life, and to the inefficient and obstructive performance of duty through minute subdivision of functions, inflexible formality, and pride of place." That this general tendency is present becomes clear if one studies the decisions of the commission since the passage of the Hepburn act in 1906. The commission is insisting more and more upon its administrative privileges, and upon the fact that it occupies a position of final and unassailable authority so long as it remains within the powers granted to it by the law of its creation, and does not violate the principles of the federal constitution. This contention of the commission is believed by many to have been recognized, and its position strengthened by the decision of the Supreme Court in the Illinois Central car distribution case.

WHAT are to be the effects if this contention of the commission is permanently established as good law, and this body becomes a full-fledged bureaucracy? Obviously, it will find it to its interest, both from the standpoint of labor saving and as the easiest method of securing an apparent justice and equality between all citizens, to base rates more nearly on distance and with steadily less regard to the desire of all shippers to be present in every market. It is so much simpler to determine whether a rate is fair by the use of a measuring stick than by the application of mental energy to the nice adjustments of commercial forces, and it is so much easier to justify the result in the eyes of an unthinking public. A straw which points the direction of this wind is the recent long-and-short haul decision in the trans-continental rate cases, just set temporarily aside by the Commerce Court. It is a considerable step in the way of applying distance to rate making. If carried too far, this will result in the provincializing of industry, the narrowing of industrial competition, the stifling of that nation-wide spirit of business emulation which has so stimulated our industrial life. Such a result may have serious consequences for the railways, but consequences far more serious for the manufacturers and the shippers. But the shippers have another possibility to contemplate as the outcome of the enlarged powers conferred upon the commission last year. It suspends proposed rates, and in the words of Commissioner Lane requires that the railways shall "satisfy our minds" of the fact that proposed new and increased rates are reasonable. Moreover, Mr. Lane declares that the commission was created to repress the upward tendency in rates. Now to "satisfy the minds" of a commission sitting tight in Washington and clothed with the sacred duty of repressing upward tendencies in rates, is almost beyond the power and plausibility of even railway counsel. We shall apparently soon be in the position of the English roads, where existing schedules are converted by law into maximum schedules and where all changes must be downward and never upward. There can be but one outcome—a rigidity of rates such as the country has never before experienced. It has been railway practice to reduce rates voluntarily as matters of experiment. If the rates developed traffic, they remained. If traffic failed to respond to the more favorable rates, the old rates were restored. But a difficulty amounting almost to an impossibility in attempts to increase rates will have a dampening effect upon the enthusiasm of railways toward voluntary reductions. If the commission and the shippers propose to fix our rates, the railways may well say, "Let them take the whole job. A system under which we do all the lowering and the commission does all the raising is the game of heads you win, tails we lose." And well may the shipper give serious consideration to the effect of abandonment altogether of that flex-

IT is axiomatic to anyone who takes the trouble to investigate the effect of bureaucratic government that much government means many rules, and that rules mean standardization of practice. Anyone who has ever tried to exercise the authority involved in even a small administrative position realizes how difficult and nerve wearing is the attempt to decide each issue on its merits as it arises, and how easy and comfortable becomes one's lot as soon as the multitude of details have been merged in the form of a standardized practice and all questions can be an-

ibility of rates which has been more responsible than any other single factor for the extraordinary industrial progress of the United States.

THE passenger efficiency inspector of the Lehigh Valley will be "watched with interest," not only by officers of that company, as stated in our news item (December 15, page 1239), but also by the officers of other roads, insofar as they can inform themselves of what he is doing, for the idea of intimate and independent inspection is being better appreciated than formerly. Assuming that this inspector has the proper gifts of acute perception, persistency and the spirit of fair dealing, the only question about the economy of keeping him in service is whether he can be in enough places every day to really know the true state of the discipline and behavior of the men, as concerns the comfort and satisfaction of passengers? One objection to the employment of inspectors independent of the division superintendent is based on the idea that multiplication of offices should be strenuously avoided. This idea must be kept in mind constantly, of course; but there is another idea, fully as important and fundamental; and that is that an intricate task, requiring time, persistency, courage and diplomacy, is never well done unless some one person makes the doing of it his main business.

THE question whether tolls shall be levied on vessels passing through the Panama canal probably will be decided at this session of Congress. The canal was built by the taxpayers of the entire country. If the taxpayers are to get any direct return from their investment it can only be in the form of tolls. Viewing the matter from a purely transportation standpoint, if the traffic cannot bear tolls sufficient to defray the cost of maintenance of the canal and the interest on the investment, this will show that its construction was not justified; for these items will be as strictly parts of the cost of transportation on it as the rates shippers will pay to the boats. On the other hand, if the traffic will bear reasonable tolls, why should they not be charged? Why should all the benefits of the canal's construction go, directly at least, to the comparatively few who will use the new route, either as operators of steamship lines, or as shippers? If no tolls are charged this will work to the benefit of the people of the two coasts, giving them a competitive advantage over those of the interior, although the latter contributed their share toward building the canal. Finally, would not the railways have some right to protest against the government unfairly fostering competition against them by giving to the owners of the steamship lines large subsidies which, in effect, is what would be done if the government should refrain from collecting reasonable tolls? Upon what principle could the giving of subsidies to steamship lines to enable them to compete more effectively against railways be better justified than could the giving of subsidies to one railway to enable it to compete against another, or than could the giving of subsidies to railways to enable them to compete more effectively against water lines?

REVIEW OF 1911 AND OUTLOOK FOR 1912

RAILWAY men will see 1911 pass into history without any regret. They will feel that nothing in its life became it like its taking off. It has been in many respects one of the worst twelve months in the annals of the railways of the United States. All through it permanent improvements on most lines were restricted and as for new construction it was almost the body of death itself. It is necessary to go back fourteen years—to 1897—in the records kept by this paper to find a time in which the amount of new construction was so small, either absolutely or in proportion to existing mileage. Only a few years ago important lines were being constructed in many parts of the country, particularly in the West. In 1906 the mileage built was 5,623 miles; in 1907 it was 5,212 miles. Now one looks in vain to find a single large piece of construction that is under way, excepting the Kansas City, Mexico & Orient, which is mak-

ing progress slowly and under adverse conditions. Even the recent competitive building of the Hill and Harriman lines in Central Oregon has stopped.

The halt in railway development has been largely due to business conditions in general. Those who are reluctant to admit that the special conditions which have been affecting the railway business for about five years have anything to do with the present situation naturally attribute it entirely to general business conditions. But the fact is that special conditions have been affecting the railway business, and that they must have had some effect on it. It is further a fact that the developments of railway facilities during the year has not kept pace with what Daniel Willard, in his recent speech at Baltimore, called "the general growth of industrial capacity." In other words, there is reason to believe that the productive capacity of mines, farms and factories has increased faster than the carrying capacity of the railways. It can hardly be said, in view of these circumstances, that the state of public opinion regarding railways and the sort of regulation that they have been receiving at the hands of the state legislatures and Congress and of the state and interstate commissions have tended to stimulate railway development. The only rational conclusion is that they have had some effect, and that that effect has been to retard improvement and retard new construction.

It is true, indeed, that railways have been able to borrow money at reasonable rates, as compared with other industries, but the fact remains that the railways have not been spending as much on improvements and additions and new construction as the welfare of the country requires. Their managements have felt they would not be justified in spending money on extensions and improvements which, because of the hampering influences mentioned above, would not bring enough return to defray even the reasonably small increase in fixed charges. This applies to existing strong companies. Existing weaker roads have, as shown in our statistics on another page, borrowed more freely, evidently for urgent needs and because bankers were willing to finance them at reasonable terms, the bigger roads having provided for urgent requirements previously. But as to new railway companies without the backing of an old and well entrenched company, it certainly seems as if conditions have affected the mind of the investor directly.

If capitalists regarded the railway business as an attractive one in which to invest, they would be investing in it as much in proportion as they have been investing in other lines of enterprise. That they have not been doing so shows that they do not consider it a desirable line of business in which to invest, and that they do not so regard it must be due to the conditions surrounding the railway business, one of the most important of which has been and is regulation which the owners and managers of the roads consider to be to a large extent unwise and ill-advised.

And, naturally, the opinion of investors regarding this matter, and not the opinions of lawmakers or commissions, decides how much capital shall be invested in the railway business; for, while public authorities may regulate, and are regulating, the capital already in the railway business, they cannot regulate any capital into the railway business. This situation would help explain the falling off in new mileage this year, when it is also noted that the existing companies who could raise money for new construction can now find hardly any place on the railway map where a long extension would be profitable. The big extensions of the Gould lines and the St. Paul to the Pacific coast have been completed.

Further evidence of the force of special conditions affecting railroading more than other industries may be afforded by the recent figures regarding earnings and expenses. The total operating revenues per mile during the fiscal year ending June 30, 1911, were \$11,588, as compared with \$11,636 in 1910, a decrease of \$48. Total operating expenses were \$7,957 per mile, as compared with \$7,711 in 1910, an increase of \$246, and net operating revenue per mile was \$3,631, as compared with \$3,925 in 1910, a

decrease of \$294, or $7\frac{1}{2}$ per cent. The net operating revenue was larger than in any previous year except 1910 and 1907. It must be borne in mind, however, that it had to be spread over properties in which more money had been invested than in any past year. Furthermore, this result was gained only after the hardest struggle with operating expenses which, in spite of the efforts made to keep them down, were larger than in any previous year; and in spite of their amount many roads were not maintained as well as their officers would have liked to have maintained them. The estimated total operating revenues for the calendar year 1911 are \$11,530 per mile; operating expenses, \$7,900; net operating revenues, \$3,630.

Past experience has shown the impossibility of predicting with any approach to accuracy the results of a railway year just being entered. We publish in another column expressions of opinion from a number of railway officers regarding the outlook. While they are not pessimistic, at the same time they are not distinctly optimistic. Most of them seem to think that business in general is apt to be somewhat better in 1912 than in 1911. Toward the close of the present year several roads have placed large orders for equipment. These will keep the equipment makers busy well into the calendar year, and that in itself is apt to stimulate general business and also that of the railways. While there is no prospect of a revival of new construction, it seems probable that on the whole orders placed by the railways in 1912 will be larger than in 1911. The roads have been to a large extent out of the market so long that it would seem they must begin buying on a greater scale if they are to keep the properties in good, and place them in better, condition, as their managements would like to do. How large their purchases will be this year, however, will depend on the condition of the money market and on the attitude of the regulating authorities; and the condition of the money market, so far as the railways are concerned, undoubtedly will itself depend greatly on the future policy of regulation followed by the state and national governments. If some of the unwise measures already passed should be repealed, if no more unwise ones should be passed, and if the regulating authorities should adopt a more constructive and less destructive policy, there is little doubt that there would be an improvement in the situation. And there seems room for hope for increased wisdom in regulation; for, undoubtedly, public opinion regarding the railways has become more intelligent and more friendly within the past year.

The most important event affecting railways during the year probably was the decision of the Interstate Commerce Commission in the so-called "rate advance cases." The commission entirely denied the application of both the eastern and western roads for higher rates. Basing its opinion chiefly on the large earnings of 1910, it held that they did not need more revenue—that earnings already were large enough to attract investment. Subsequent developments, already referred to, do not indicate that capitalists agree with the commission, and capitalists—not the commission—determine what shall be invested.

The commission also rendered important decisions during the year in the cases involving the rates of the transcontinental railways from the east to intermediate western points such as Salt Lake City and Spokane. It applied the amended fourth section in these cases and ordered the roads not to make their rates from the east to the intermediate points more than certain percentages higher than their rates to the Pacific coast. The railways in September appealed to the Commerce Court, which held that in attempting to force the roads to base their rates to intermediate points on their rates to the coast the commission had exceeded its powers. It was common talk among shippers and railway men that if the court issued the injunction the commission would begin a warfare against it, and the commission in its annual report, which was made public last week, fulfilled these expectations. As a result of the action of the court in these cases a movement has been started by members of Congress from the intermediate western states to abolish it, and the comments of the commission on the court's decision are adapted, whether purposely or not, to help the work along.

The courts have rendered during the year several important decisions affecting railways. The one which attracted the most attention was that of Judge Sanborn of the United States circuit court, holding unconstitutional the passenger and freight rates fixed by the legislature and the railway commission of Minnesota, on the grounds that they interfered with interstate commerce by making it impracticable for the railways to maintain their interstate rates, and that they were confiscatory in that they would reduce the return of the railways below 7 per cent. The case has been appealed to the United States Supreme Court. In the case of the Atlantic Coast Line versus Riverside Mills, the Supreme Court upheld the provision of the Interstate Commerce act making the initial carrier responsible for loss of or damage to goods occurring on a connecting line. The Supreme Court also, in a unanimous decision, upheld the constitutionality of the corporation tax law.

In the Willamette Valley lumber rate case it annulled an order of the Interstate Commerce Commission reducing the rates on rough lumber from points in Oregon south of Portland to San Francisco. The main issue involved was as to the conditions on which the Interstate Commerce Commission may base a decision determining the reasonableness of a rate. The court said that the commission's opinion indicated that its order was based on its belief that it had the right under the law to protect the lumber interests of the Willamette Valley from the consequences which it was deemed would arise from a change of the rate, even if that change was from an unreasonably low rate; and the court held that the commission had no power to fix rates on any such basis. In effect, the contention of the commission which the court overruled was that the commission was the final judge of the facts. The courts, it would seem, under this interpretation of the law, will not necessarily in all cases accept the commission's findings of fact and merely ascertain if it has applied the law correctly to them, but will also determine if its findings of fact are correct. The Supreme Court also rendered a decision upholding the validity of the federal hours of service law.

Railway men took great interest in the decisions of the Supreme Court of the United States in the Standard Oil and American Tobacco Company cases. The court held that the Sherman law prohibits only combinations in unreasonable restraint of trade. The decision was at first hailed as an interpretation that would enable business men to know whether they were or were not violating it, but subsequent consideration has led many of them to believe that it is impossible for anyone to anticipate what criterion the court will use in any given case to determine what is reasonable. Railway men, for example, do not know whether under the court's "rule of reason" traffic associations, such as it condemned in the Trans-Missouri Freight Association and the Joint-Traffic Association cases, would now be held legal or not.

The Railroad Securities Commission completed its investigation of the question of regulation of railway securities by the federal government, and made a report opposing most of the radical suggestions that had been advanced on this subject. In a general way, its report advocated steps that will secure full publicity regarding the value of railway property, the purpose for which railway securities are issued, the use made of the proceeds, etc.

Railway managements have shown increased activity during the year in formulating and adopting means for promoting the economy and safety of operation. The attack made on railway efficiency by counsel for the shippers in the rate advance cases caused the managers to look around sharply to find out how much justification there was for it, and while no one familiar with railway affairs believes that the sweeping criticisms made were justifiable, the managers have found a good many ways to effect economies without impairing the service. On the other hand, they have found that the attitude of the labor unions and public regulation in many cases are great obstacles to the adoption of more efficient methods. One of the interesting developments during the year was the following by several roads of the example set last year by the Chicago & North Western in organizing "safety committees" composed of both officers and

employees. Among the roads which have done so are the Baltimore & Ohio, the Delaware, Lackawanna & Western and the St. Louis & San Francisco.

Several railways have had serious controversies with their employees, particularly with shop men, regarding wages and conditions of employment. The shop men of a number of western roads organized federations which demanded recognition from the managers and substantial increases in wages, reductions in hours of work, the abolition of piece work, etc. The refusal of the Harriman Lines and the Illinois Central to yield to their demands resulted in a serious strike, which, however, the railways won. The white firemen on the Queen & Crescent struck because the company refused to accede to their demand that all negroes employed as firemen should be discharged within 90 days and that thereafter no negroes should be employed as firemen. Mediation by Judge Knapp resulted in the ending of this strike under an agreement by which the company limits the number of negro firemen employed on all parts of the road and will not employ them at all on certain parts of it.

MOTIVE POWER AND ROLLING STOCK IN 1911.

THE statistics for locomotive and car orders placed by the railways in 1911 indicate how severely the roads held down expenditures during the greater part of the year. The number of locomotives ordered was 2,850. We began keeping this record in 1901 and this is the smallest number ordered in any year since then, except 1904 and 1908. The number of passenger cars ordered was 2,623, which has been exceeded in 6 of the 10 years since and including 1901. The number of freight cars ordered in 1911 was 133,117, which is the smallest number ordered in any year since 1901, except 1903 and 1908. When it is considered that the orders for equipment have been relatively small for several years the showing for the year is unsatisfactory, especially as regards freight cars. The railways have apparently been buying a very inadequate amount of such equipment and when a sharp revival of business occurs they may find themselves incapable of satisfactorily handling the traffic. A large proportion of the orders for equipment, and especially for freight cars, has been placed within the last 60 days. The orders during the early part of the year were extraordinarily small.

The development in locomotive design and construction during the last 12 months has been truly remarkable. There has been a tendency toward a development in size and power to a higher limit, and also a marked tendency toward increasing the capacity of the locomotive without materially increasing its weight. More careful attention has been given to the selection of correct proportions, based on data derived from exhaustive investigations and reduced to standard practice; also in the modification and improvement in the design and construction of details to secure greater economy both in the cost of operation and maintenance.

The development in size and power has resulted in new wheel types in order that excessive wheel and journal loads might be avoided. This is particularly noticeable in the "mountain type" passenger locomotives which were introduced on the Chesapeake & Ohio (*Railway Age Gazette*, September 22, 1911, page 555) and the Santa Fe 2-10-10-2 Mallets (*Railway Age Gazette*, August 25, 1911, page 379). Service tests during the year have demonstrated the value of the high capacity locomotives under certain conditions for not only greatly reducing the cost of operation but also for increasing the capacity of a road or division.

Increasing the capacity of a locomotive without materially increasing its weight, as has been done by the addition of superheaters and brick arches to the Pacific type locomotives on the New York Central Lines, or by adding these devices and making other changes to the Mallets on the Pennsylvania division of the same system, has a most important effect on reducing the cost of conducting transportation. For instance, if the capacity of a given locomotive can be increased 20 per cent. in this way, it will be possible to handle practically 20 per cent. more traffic without materially increasing the operating costs, and this without going

to any expense for changing the track or bridges and with only a nominal expenditure for increasing the length of sidings.

Too little attention has been given in the past to designing locomotives for the special conditions under which they were to be used, but a distinct step in this direction has been taken during the past year. An important example of this tendency is the "mountain type" passenger locomotives built for the Chesapeake & Ohio by the American Locomotive Company. The maximum sustained horse power of this locomotive was developed in hauling a train of 4,200 tons over a continuous grade of 15 ft. per mile at an average speed of 23½ miles per hour. With a resistance of 3 lbs. per ton for the cars, the calculated horse power was 2,480, a record which is claimed to be the highest ever attained by a steam locomotive. To secure this large capacity the firebox was equipped with a brick arch and an automatic stoker, and the boiler had a combustion chamber and a superheater. A screw reverse gear was also used. This locomotive was specially designed for use under certain conditions on mountain grades and the type of wheel base would be unsatisfactory for passenger service under other conditions, although it is possible that under certain circumstances it might be used in freight service.

For freight service the Mikado and the Mallet types have come into greater prominence. The Mikado has given good results on divisions where there are no heavy grades and where the conditions are such that it is advisable to have an extra large boiler capacity. The extra pair of wheels on the trailing truck gives this type of locomotive an important advantage over the consolidation locomotive in boiler capacity, as it is possible to make the firebox larger and to increase the length of the boiler. Before going to these newer types of locomotives, however, it is necessary to study the special conditions under which they are to be used, and also to determine whether the standard types of locomotives cannot be sufficiently increased in capacity for the service in which they are to be used by either modifying the design or by adding such features as the superheater and brick arch.

The Mallet locomotive has given splendid results in mountain service and on heavy grades, 500 of them now being in service on the different railways in the United States, Canada and Mexico. Their economical operation compared with other engines on grades of 1 per cent. and over has been repeatedly demonstrated and they have been improved in various ways, as defects of design have developed in service. While they were originally designed for use in pushing service they have been adapted to road service on several roads with very good results, it being of course necessary to modify the design to suit these conditions.

The development of the automatic stoker has made important progress and a considerable number are now in use on large engines on fast schedules, or where an unusual amount of coal is burned per hour. Undoubtedly, however, the increased capacity for the same fuel consumption made possible by improved locomotive design and the use of the superheater, brick arch and other auxiliaries has to a certain extent reduced the demand for the stoker for the present. Material progress has been made in the development of locomotives for burning lignite coal. Oil burning locomotives are being used in greater numbers, both in the districts adjacent to the oil fields and in certain places where the cost of oil is not prohibitive and it is desired to reduce the possibility of fires along the right of way.

There has been little improvement or radical change in the general design of steel freight cars during the year. The most interesting departure is the new design of the Pennsylvania Railroad for the 52 ft. steel gondolas with a maximum capacity of 80 tons. It is understood that 200 of these will be ordered as a trial lot. If cars of this size can be used in service where it is possible to load them to their capacity they will probably greatly reduce the cost of conducting transportation. However, several problems must be worked out in connection with the design of the details, and notably of the wheels, as commented on in the *Railway Age Gazette* of December 22, 1911.

The steel tank car has been generally improved and enlarged in recent years, and those lately built have tanks 9 ft. in diameter

with a capacity of 14,650 gal., or 56 tons, which is 72 per cent. of the total weight of the loaded car. The important feature of the design is that the large tank is so shaped that it can be placed low on the frame with center of gravity only 7 ft. above the top of the rail, which is as low as that with the older and smaller cars of 8,000 gal. capacity. The low price of steel plates has enabled builders to offer standard steel cars at such a low figure that it has been the principal cause of the large number ordered in the last months of the year.

While the freight car shops were not very busy during most of the year, the passenger car shops were well occupied in building steel equipment. Steel passenger cars are being used in large numbers. Several of the different designs have been in service for a sufficient time to indicate that certain changes will be necessary to improve the design. A number of troublesome problems have come up in connection with the design and construction of these cars, but they are gradually being overcome and will undoubtedly be fully solved, although it may take some time to work them out satisfactorily.

CARS AND LOCOMOTIVES BUILT IN 1911.

IN no data regarding railway activity are the general depression and uncertainty of the past year more strongly indicated than in our figures showing the new equipment ordered and built during 1911. As shown elsewhere in this issue, the number of freight cars, passenger cars and locomotives ordered has been not only smaller than in 1910 but has been small as contrasted with the amount ordered on the average during the past decade. Moreover, statistics compiled by the *Railway Age Gazette* show that the number of cars and locomotives actually built during the year is smaller than the average for the past ten or twelve years, and in the case of freight cars is actually less than for any year during which we have made these compilations.

We have received reports from the principal car and locomotive builders in the United States and Canada and our investigation indicates that the total number of freight cars built during 1911 has been 72,161; passenger cars, 4,246, and locomotives, 3,530. The figures for 1910 were: Freight cars, 180,945; passenger cars, 4,412; and locomotives, 4,755.

While the number of orders placed during the year, including both those for equipment to be constructed in the railways' own shops, and those given to outside builders, is substantially below that for 1910, the number of freight cars built is less than one-third of that for last year.

It is well known that there has been a strong tendency toward curtailment of expenditures in nearly all departments during the year. In addition, the remarkable falling off in the showing for cars built as compared with orders placed may be explained by the fact that during the first half of 1910 orders were very heavy, while comparatively few were placed during the latter half of the year. Therefore the shops were busy during the last six months of 1910 in filling orders received earlier in the year or during the latter part of 1909 and had very few unfilled orders at the close of the year. In 1911 an exactly contrary condition prevailed. During the first nine months or so the railways were very chary of undertaking large expenditures even for equipment really needed, and it has only been during the past three months that the imperative demands of traffic have impelled the placing of large orders. The showing of new equipment orders for the entire year has been rendered possible by large orders placed within the past few weeks. On these orders deliveries have not yet been made; and in consequence the year's record shows an almost unprecedentedly low total for cars built which will not be materially affected by some lack of completeness in our figures.

Judging by present inquiries, it seems fair to predict that the coming year will show a favorable record both for equipment built and equipment ordered. Many manufacturers who have done less than half the business this year that they did in 1910 have on hand unfilled orders over twice as large as those on their books at the close of 1910.

Of the freight cars built in the past year 68,961 were for domestic service and 3,200 for export. Of the passenger cars 3,938 were for domestic service and 308 for export. Of the freight cars 52,592, or approximately two-thirds, were of all-steel construction or had steel underframes, and of the passenger cars 2,930, a slightly higher proportion, were of all steel construction or had steel underframes. Of the passenger cars, 415 were electric railway cars. The following table shows the cars built in the past 13 years:

| Year. | Freight. | Passenger. | Total. |
|------------|----------|------------|---------|
| 1899..... | 119,886 | 1,305 | 121,191 |
| 1900..... | 115,631 | 1,636 | 117,267 |
| 1901..... | 136,950 | 2,055 | 139,005 |
| 1902..... | 162,599 | 1,948 | 164,547 |
| 1903..... | 153,195 | 2,007 | 155,202 |
| 1904..... | 60,806 | 2,144 | 62,950 |
| 1905..... | 165,155 | 2,551 | 168,006 |
| 1906..... | 240,503 | 3,167 | 243,670 |
| 1907..... | 284,188 | 5,457 | 289,645 |
| 1908..... | 76,555 | 1,716 | 78,271 |
| 1909..... | 93,570 | 2,849 | 96,419 |
| 1910..... | 180,945 | 4,412 | 185,357 |
| 1911*..... | 55,931 | 3,566 | 59,507 |

*Includes Canadian output.

Returns from locomotive builders show that 3,530 were built during the year, of which 3,143 were for domestic service and 387 for export. Two hundred and twenty-five were compound and 133 were electric locomotives, a large part of which have been used for industrial switching service and similar uses.

| Year. | No. Built. | Year. | No. Built. | Year. | No. Built. |
|-----------|------------|-----------|------------|------------|------------|
| 1893..... | 2,011 | 1900..... | 3,153 | 1906..... | 6,952 |
| 1894..... | 695 | 1901..... | 3,384 | 1907..... | 7,362 |
| 1895..... | 1,101 | 1902..... | 4,070 | 1908..... | 2,342 |
| 1896..... | 1,175 | 1903..... | 5,152 | 1909..... | 2,887 |
| 1897..... | 1,251 | 1904..... | 3,441 | 1910..... | 4,755 |
| 1898..... | 1,875 | 1905..... | 5,491 | 1911*..... | 3,530 |
| 1899..... | 2,475 | | | | |

*Includes Canadian output.

NEW CONSTRUCTION IN 1911.

RETURNS from nearly all of the railways, supplemented by our own records and figures furnished by railway commissions, show that 3,066 miles of new main line was built in the United States during the calendar year 1911, as compared with 4,122 miles the previous year. This is the smallest figure since 1897, when 2,109 miles was added. The average number of miles added each year is 3,885, since we began keeping this record in 1893. The 1910 record was 374 miles more than the preceding year. These figures do not include new second, third or fourth track, sidings or electric lines, nor do they include re-located lines on which work was carried out by the following companies: Maine Central relocated 6.36 miles in Maine; the Kansas City Southern built a new line, 29.45 miles long, in Oklahoma, Arkansas and Louisiana, replacing 21.3 miles, and in addition reduced the grade on present alignment on five stretches, aggregating 15.3 miles. The Mississippi Central completed work on two miles of relocated track on the main line in Mississippi.

Of the mileage added this year, the Chicago & North Western laid a total of 173 miles, including the new cut-off from Lindworm, Wis., to Necedah, 130.55, which was the longest single stretch of line reported this year. The Kansas City, Mexico & Orient laid the second longest stretch of single track, 117 miles, from Tankersly, Tex., to Granada. The Harriman Lines built a total of about 320 miles, and the Santa Fe lines, a total of 195 miles, the latter including a section of the cut-off between Texico, N. M., and Coleman, Tex.

In Canada the Grand Trunk Pacific built 271 miles in the provinces of Saskatchewan, Alberta and British Columbia, and the National Transcontinental, which is building the eastern end, built 280 miles. On the western end work is under way on 1,167 miles, and surveys are being made on 627 miles, while on the eastern end work is now under way on a total of 490 miles. The Canadian Pacific built a total of 487 miles, and has work under way on a total of 368 miles on the western lines. The Canadian Northern Ontario built 47 miles; has 73 miles located and 944 miles under construction, in the province of Ontario, and in addition has under construction 38 miles in the province of Quebec. The Canadian Northern lines in the western provinces added 456

miles during 1911, and rapid progress is being made on the western end on the transcontinental line in British Columbia. Over 20 miles of track has been laid, and 80 miles graded, between Port Mann and Hope, and work is under way on an additional 160 miles. The line from this point to the Alberta boundary, near Yellow Head Pass, is under contract, and it is expected that this work will be finished in about two years.

In Mexico the National Railways of Mexico built a total of 161 miles; the Mexico North Western built 131 miles, and the Southern Pacific of Mexico built 36 miles. The figures for Mexico do not include a change of gage on the line of the National Railways of Mexico, between Acambaro, Michoacan and Uruapam, 102 miles, and the relocation of 38 miles between these places.

The new main track mileage is reported under 43 states and territories, including Alaska, where 47 miles of new line was built. Texas, which was first in 1909, and 1910, is first this year, with 414 miles; this is 343 less than was built in this state in 1910. Oregon is next with 224 miles, North Dakota and Wisconsin each built over 200 miles. Colorado, Idaho, Kentucky, Georgia, California and Florida, follow in that order, each building over 100 miles of main line in 1911. No new mileage was reported in Connecticut, Delaware, District of Columbia, Maine, Massachusetts, New Hampshire, New Mexico, Rhode Island or Vermont. In Canada 1,898 miles was reported, as compared with 1,844 miles in 1910. In Mexico 351 miles was reported, as compared with 138 miles the previous year, an increase of 213 miles.

Particulars of new mileage are given elsewhere in this issue. The following table shows our figures for mileage built in the United States during the last nineteen years:

| | | |
|----------------|----------------|----------------|
| 1893.....3,024 | 1900.....4,894 | 1906.....5,623 |
| 1894.....1,760 | 1901.....5,368 | 1907.....5,212 |
| 1895.....1,428 | 1902.....6,026 | 1908.....3,214 |
| 1896.....1,692 | 1903.....5,652 | 1909.....3,748 |
| 1897.....2,109 | 1904.....3,832 | 1910.....4,122 |
| 1898.....3,265 | 1905.....4,388 | 1911.....3,066 |
| 1899.....4,569 | | |

PROGRESS IN RAILWAY SIGNALING.

TWENTY THOUSAND, an easy figure to remember, now represents the mileage of railways in the United States equipped with automatic block signals, an increase of over 60 per cent. in three years. We are unable to give complete and exact figures for January 1, 1912, because of the difficulty of getting responses from some of the railways; but our table gives a pretty fair idea of the situation, nevertheless. The great bulk of the more important railway mileage of the country now has the block system in one form or another, and the yearly increase in the manual system is small or negative. On some roads there is a decrease, automatics having been substituted for the manual system. One road reduces the total of our table 250 miles by withdrawing erroneous figures furnished a year ago. The use of automatics on single track continues to spread, and the mileage is again nearly as large as that on double track. The Union and Southern Pacific, taken together, continue to furnish the largest item, these two, with their controlled lines, now reporting (including a considerable amount of double track) over 5,500 miles of road equipped with automatic signals. The Boston & Maine and its controlled line the Main Central; the Chicago, Milwaukee & Puget Sound, the Illinois Traction Electric Line, and the St. Louis & San Francisco each report a large automatic single-track mileage; and this use of automatic signals seems now to be so extensively favored that the adoption of the idea by additional roads may be looked upon as assured.

While the progress shown by the foregoing figures is not so great as could have been hoped for, still much has occurred in the field of work of the signal engineer which shows considerable development. The use of automatic signals on single track, as here noted, the use of green lights for the proceed indication and the introduction of upper quadrant signaling, have progressed steadily; and the use of power-operated signals at mechanical interlocking plants has made this type of interlocking available for a greater variety of conditions.

The Pennsylvania Terminal in New York, and the North-Western Terminal in Chicago, both representing highly intensive

handling of terminal operations, exemplify also the most intensive application of power interlocking. In these plants the switches and signals and their operations—which now constitute a vital element in all large stations—seem, from the standpoint of safety, to have been brought well-nigh to the highest attainable perfection.

The engineering side of signaling has witnessed some notable developments, particularly in alternating current apparatus; and the application of this to certain operating conditions has in turn shown economies in maintenance which have attracted considerable attention.

Two or three automatic train stops have been tested during the year, and railway officers are perhaps more favorably inclined toward this device; but progress is slow and any appreciable activity on the part of the railways in this field is still in the future.

As to the enforcement of the block system by legislation, Indiana has strengthened its law, and two or three other states, having statutes on this subject, have been watching Indiana, though no important action has been taken. Considerable public attention has been attracted toward the means which railways use to secure safety in travel, and the Interstate Commerce Commission has repeated its recommendation for a federal law, but there is no sign that Congress intends to take any action. The Indiana Commission, acting under its new law, has negotiated with the roads on a basis generally reasonable, and in some cases the roads have agreed to put in automatic signals when the law would have been satisfied with a less complete system. A few electric interurban lines now have automatic track circuit block signals, and the successful use of lights as signals, in place of semaphores, under favorable conditions, seem likely to make for substantial progress.

Rapid developments in the application of alternating current have contributed greatly to the solution of the problem of signaling on electric railways and more specific data is being worked up by a committee of the Electric Railway Association.

The importance of signaling in the most intensive situations, in which all other methods of improvement have been exhausted, has a notable example in the signaling of the Interborough subway in New York. The "time-speed" signaling which has been brought to its completion during the year in the subway has made possible the running of trains closer together—at intervals even shorter than the length of the station platform—which has resulted in an increase of 17 per cent. in the number of passengers carried. As these average in the busy season over a million a day the magnitude of the increase brought about by the signal system affords a remarkable tribute to the signal engineer.

The art of signaling suffers not only from the drawbacks inseparable from a comparatively new and a rapidly growing science or industry, but also from the fact that it makes heavy demands on the railway treasuries; while its problems have to be dealt with by two departments (besides the financial). Nevertheless, the signal engineers as a body have met all demands most creditably.

RECEIVERSHIPS AND FORECLOSURE SALES IN 1911.

THE sales of railway properties under foreclosure were quite unimportant in 1911, with the single exception of the sale of the International & Great Northern. Few roads went into the hands of receivers in either 1909 or 1910, and the roads that went into the hands of receivers in 1908 were mostly sold under foreclosure in 1909, although the International & Great Northern foreclosure sale is a consequence of the 1908 receivership. The total mileage of roads sold under foreclosure in 1911 was 1,386, of which 1,160 is accounted for by the sale of the International & Great Northern.

The most interesting point about the sale of the International & Great Northern and its problems of reorganization is due to the fact that this reorganization had to be carried out despite the laws of Texas and the attitude of the Texas railway commission. The reorganization provided for the sale of the property and the exchange of old International & Great Northern

securities for securities in the new company, a scaling down of interest charges and the raising of funds to pay floating debt, receivership certificates and similar claims by the sale of \$11,000,000 notes. Apparently the way the difficulties interposed by the Texas laws and railway commission have been overcome is by the formation of an International & Great Northern holding company, which was formed in Virginia, and it is supposed will issue its own securities in exchange for the deposit of new International & Great Northern of Texas securities. In this way stockholders of the old I. & G. N. and other security holders will be enabled to receive some form of security which will represent their equity in the property and the present sacrifice which they are making in its reorganization.

The following table shows the foreclosure sales in 1911:

FORECLOSURE SALES IN 1911 OF STEAM ROADS.

| | Railway mileage. | Funded debt. | Stock. |
|---|---------------------|-----------------|--------------|
| Atlantic Northern & Southern..... | 17 | \$111,500 | \$178,400 |
| Bartlett-Florence | 11 | 78,000 | 25,000 |
| Cincinnati, Bluffton & Chicago..... | 53 | 1,000,000 | 1,125,000 |
| Dardanelle, Ola & Southern..... | 15 | 160,000 | ..... |
| Eagles Mere Railroad..... | 10 | 83,500 | 50,000 |
| Delaware & Eastern..... | 46 | 942,000 | 120,000 |
| Ferdinand Railway | 7 | 57,000 | 50,000 |
| International & Great Northern..... | 1,160 | 24,917,053 | 9,775,000 |
| Macomb & Western Illinois..... | 20 | ..... | 25,000 |
| Pittsburgh, Binghamton & Eastern..... | 6 | 175,000 | ..... |
| Placerville & Lake Tahoe..... | 27 | 240,000 | 810,000 |
| Virginia Anthracite Coal and Railway..... | 9 | 80,000 | 100,000 |
| Wilmington, New Castle & Southern.... | 5 | 400,000 | 330,000 |
| Total | 1,386 | \$28,153,053 | \$12,588,400 |

*On June 30 Poor's Manual said that no bonds were issued.

†This is the price at which the road was sold. The par value of outstanding securities could not be ascertained.

‡See text.

The other roads sold were unimportant short lines.

The Atlantic Northern & Southern was bought in by the president of the Omaha & Iowa for \$402,000.

The Bartlett-Florence was bought by J. L. Bailey for \$41,000.

The Cincinnati, Bluffton & Chicago was sold in March.

The Eagles Mere Railroad was bought by its bondholders' committee for \$20,000.

The Delaware & Eastern was sold to representatives of the bondholders.

The Ferdinand Railway was sold for \$20,000.

The Macomb & Western Illinois was sold for \$500,000.

The Virginia Anthracite Coal & Railway was bought by the Norfolk & Western for \$100,000.

The Pittsburgh, Binghamton & Eastern was sold in February.

SUMMARY OF FORECLOSURE SALES IN 36 YEARS.

| Year. | No. of roads. | Miles. | Bonds and stocks. |
|---------------------|------------------|---------|----------------------|
| 1876..... | 30 | 3,840 | \$217,848,000 |
| 1877..... | 54 | 3,875 | 198,984,000 |
| 1878..... | 48 | 3,906 | 311,631,000 |
| 1879..... | 65 | 4,909 | 243,288,000 |
| 1880..... | 31 | 3,775 | 263,882,000 |
| 1881..... | 29 | 2,617 | 137,923,000 |
| 1882..... | 16 | 867 | 65,426,000 |
| 1883..... | 18 | 1,354 | 47,100,000 |
| 1884..... | 15 | 710 | 23,504,000 |
| 1885..... | 22 | 3,156 | 278,394,000 |
| 1886..... | 45 | 7,687 | 374,109,000 |
| 1887..... | 31 | 5,478 | 328,181,000 |
| 1888..... | 19 | 1,596 | 64,555,000 |
| 1889..... | 25 | 2,930 | 137,815,000 |
| 1890..... | 29 | 3,825 | 182,495,000 |
| 1891..... | 21 | 3,223 | 169,069,000 |
| 1892..... | 28 | 1,922 | 95,898,000 |
| 1893..... | 25 | 1,613 | 79,924,000 |
| 1894..... | 42 | 5,643 | 318,999,000 |
| 1895..... | 52 | 12,831 | 761,791,000 |
| 1896..... | 58 | 13,730 | 1,150,377,000 |
| 1897..... | 42 | 6,675 | 517,680,000 |
| 1898..... | 47 | 6,054 | 252,910,000 |
| 1899..... | 32 | 4,294 | 267,534,000 |
| 1900..... | 24 | 3,477 | 190,374,000 |
| 1901..... | 17 | 1,139 | 85,808,000 |
| 1902..... | 20 | 693 | 39,788,000 |
| 1903..... | 13 | 555 | 15,885,000 |
| 1904..... | 13 | 524 | 28,266,000 |
| 1905..... | 6 | 679 | 20,307,000 |
| 1906..... | 8 | 262 | 10,400,000 |
| 1907..... | 6 | 114 | 13,777,000 |
| 1908..... | 3 | 138 | 2,547,000 |
| 1909..... | 12 | 2,629 | 250,033,000 |
| 1910..... | 17 | 1,100 | 93,660,109 |
| 1911..... | 13 | 1,386 | 40,741,453 |
| Total, 36 years.... | 976 | 119,206 | \$7,280,903,562 |

The Placerville & Lake Tahoe was sold to C. D. Danaher for \$450,000. This price included the assets of the Eldorado Lumber Co.

The Wilmington, New Castle & Southern was not sold as a whole. The five-mile section between Wilmington, Del., and New Castle was sold separately, and our table giving mileage shows only the mileage actually sold.

There were only four other unimportant roads beside the Wabash put into the hands of receivers in 1911, and if it were not for the Wabash, only 91 miles of railway would have been put in receivers' hands. Of course, it is not possible to say that these are all of the railways that were put in the hands of receivers in 1911, because some roads may have passed into friendly secret receiverships. The Wabash, however, brings the total mileage up to 2,606, and the total funded debt of roads going into the hands of receivers up to \$116,351,496.

The following table shows the receiverships established in 1911:

RECEIVERSHIPS ESTABLISHED IN 1911.

| | Railway mileage. | Funded debt. | Stock. |
|---------------------------------------|---------------------|-----------------|--------------|
| Atlantic Northern & Southern..... | 17 | \$111,500 | \$178,400 |
| Eagles Mere Railroad..... | 10 | 83,500 | 50,000 |
| Jamestown, Chautauqua & Lake Erie.... | 37 | 750,000 | 750,000 |
| Jamestown & Chautauqua..... | 27 | 250,000 | 475,000 |
| Wabash Railroad | 2,515 | 115,156,496 | 92,801,986 |
| Total | 2,606 | \$116,351,496 | \$94,255,386 |

The Wabash receivership was established in December, was said to be a friendly receivership, and had probably been inevitable ever since the Wabash-Pittsburgh Terminal and the Wheeling & Lake Erie went into the hands of receivers. The reorganization will not be under the undivided control of the Goulds, probably, but will be carried on in connection with Kuhn, Loeb & Company and various re-organization committees which have already been formed to protect the various classes of security holders. It is probable that the reorganization will be considerably complicated by the fact that the Wabash guarantees \$8,000,000 notes of the Wheeling & Lake Erie that have been defaulted since 1908, which notes are held by Kuhn, Loeb & Company; while on the other hand the Missouri Pacific owns common and preferred stock of the Wabash, so that it is itself in a not very strong financial position; and the effect on the Missouri Pacific of an assessment on the common and preferred stock of the Wabash will have to be carefully considered.

The following is the record taken from our files of roads put into the hands of receivers since 1875:

SUMMARY OF RECEIVERSHIPS FOR 36 YEARS.

| Year. | No. of roads. | Miles. | Bonds and Stocks. |
|---------------------|------------------|---------|----------------------|
| 1876..... | 42 | 6,662 | \$467,000,000 |
| 1877..... | 38 | 3,637 | 220,294,000 |
| 1878..... | 27 | 2,320 | 92,385,000 |
| 1879..... | 12 | 1,102 | 39,367,000 |
| 1880..... | 13 | 885 | 140,265,000 |
| 1881..... | 5 | 110 | 3,742,000 |
| 1882..... | 12 | 912 | 39,074,000 |
| 1883..... | 11 | 1,990 | 108,470,000 |
| 1884..... | 37 | 11,038 | 714,755,000 |
| 1885..... | 44 | 8,836 | 385,460,000 |
| 1886..... | 13 | 1,799 | 70,346,000 |
| 1887..... | 9 | 1,046 | 90,318,000 |
| 1888..... | 22 | 3,270 | 186,814,000 |
| 1889..... | 22 | 3,803 | 99,664,000 |
| 1890..... | 26 | 2,963 | 105,007,000 |
| 1891..... | 26 | 2,159 | 84,479,000 |
| 1892..... | 36 | 10,508 | 357,692,000 |
| 1893..... | 74 | 29,340 | 1,781,046,000 |
| 1894..... | 38 | 7,025 | 395,791,000 |
| 1895..... | 31 | 4,089 | 369,075,000 |
| 1896..... | 34 | 5,441 | 275,597,000 |
| 1897..... | 18 | 1,537 | 92,909,000 |
| 1898..... | 18 | 2,069 | 138,701,000 |
| 1899..... | 10 | 1,019 | 52,285,000 |
| 1900..... | 16 | 1,165 | 78,234,000 |
| 1901..... | 4 | 73 | 1,627,000 |
| 1902..... | 5 | 278 | 5,835,000 |
| 1903..... | 9 | 229 | 18,823,000 |
| 1904..... | 8 | 744 | 36,069,000 |
| 1905..... | 10 | 3,593 | 176,321,000 |
| 1906..... | 6 | 204 | 55,042,000 |
| 1907..... | 7 | 317 | 13,585,000 |
| 1908..... | 24 | 8,009 | 596,359,000 |
| 1909..... | 5 | 859 | 78,095,000 |
| 1910..... | 7 | 735 | 51,427,500 |
| 1911..... | 5 | 2,606 | 210,606,882 |
| Total, 36 years.... | 724 | 131,839 | \$7,632,560,382 |

Letters to the Editor.

"ABOLISH THE PRESENT GIVING."

ST. LOUIS, Mo., December 21, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The discussion of this question in your columns should result in benefit to all concerned, and it is to be hoped that something practical will be attained before another excuse for the practice comes around next year.

The evil features are so manifest that reliance should not be placed on publicity alone, and consideration should now, it seems to the writer, be directed to a cessation of the practice; and this should not be a matter of great difficulty if the railway executives will endeavor to relieve their subordinate officers of the embarrassment imposed by the present widespread abuse.

The writer is under the impression that matters of criticism in connection with railway conventions in the past have been remedied at the suggestion of the railway executives, and perhaps an intimation by them to the supply men through the Railroad Supply Men's Association or otherwise would bring about the needed reform. The various railway officers affected would then, without the appearance of offensiveness, be in a position to return any "gifts" that might be sent regardless of such a "hint" from their executives.

A discussion of this feature will, no doubt, bring forth the best method for dealing with the subject. PURCHASING AGENT.

CLEVELAND, O., December 19, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Your editorial at the top of page 1199 of the issue of December 15 should be printed in red and sent broadcast throughout the land. I would emphasize particularly the following line, "If it is not actually grafting it is the vestibule to it."

This practice of giving and accepting gifts from parties from whom as agents we purchase thousands of dollars' worth of supplies has for many years been a most potent force in undermining the character of the men engaged in it. That the New York Times should manifest surprise to learn of the existence of this practice is positively funny, and shows that in the eager search for the latest news the metropolitan papers can sometimes overlook matters of first importance that are close at hand.

The giving of presents in this manner is a practice of considerable antiquity. The railways are concerned in it only because of the large amount of business which they do. It is a very healthy sign of the times that the matter is receiving attention and condemnation by both the technical and secular press. The newspapers frequently boast of their great service to mankind as molders of public opinion. In this particular line they may well have reason to be proud of that distinction.

ALBERT J. HIMES.

BLOCK SIGNALS AND FUEL ECONOMY.

CHICAGO, December 3, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Referring to the paper on "Opportunities for Economy on Railways" by L. C. Fritch in your issue of November 24, there is a way in which the use of automatic block signals can contribute to fuel economy in no small degree. Suppose there are two trains to meet on a single track line equipped with automatic block signals working in three positions. If the inferior train arrives first, pulls into the siding and finds the outgoing signal in the clear position, the fireman can safely bank his fire and wait until the signal assumes the 45 deg. position, when he should have just about enough time to fire up and be ready to pull out when the opposing train arrives. The reason for this is that the clear signal will show that there is no train within two blocks of the station; the 45 deg. position of the signal after it has been clear shows that a train has entered the second block in advance of the station.

Provided the blocks are not too short, the same results may be obtained on double track by the use of switch indicators. In this case, if a train enters a passing track to be passed and finds the outgoing indicator clear, the fires may be banked as before until the indicator announces the approach of a train. Local conditions enter into both cases; for example, switching operations might give misleading indications, but the crews are usually sufficiently familiar with the road to take such things into consideration. It can be easily seen that such a method of handling fires will result in a marked saving in coal over the usual method of keeping up a full head of steam while waiting beyond the appointed time for the arrival of another train. This system has the exceptional quality of being self enforcing, when understood, as it not only saves coal for the company, but saves the fireman's back as well. This method of utilizing the block system was discovered, I am told, by an engineman on a western road, and the results have been very gratifying. The scheme can be worked with two position signals, also, provided the outgoing signal has two arms, home and distant; then the vertical position of the distant is the signal to fire up. It has been assumed in the foregoing that the signals were normal clear. If they are normal danger the clearing of the signal to 45 deg. or of the top arm if two arm two position would be the signal to fire up.

W. H. ARKENBURGH.

THE RAIL SITUATION ON THE HARRIMAN LINES.

CHICAGO, Ill., December 22, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Referring to your article: "What are the Railways Going to do About Rails?" in your issue of December 15, I desire to comment thereon as follows:

While not specifically so stated, the impression left on my mind by this article, and I think on that of most readers, is that the broken rail situation on the railways of the United States is in a very serious, not to say desperate, condition.

The matter of broken rails first began to receive serious attention in 1906 and 1907, when a change to heavier sections was being made by various railways in the United States. The new and heavier rails developed an alarming number of breaks and after much conference on the part of the railway organizations and manufacturers, a great deal was done in the way of change of sections, chemical composition, improved tests and inspection, and mill practice, to improve conditions, which at that time were really serious. Omitting details leading up to this, the result has been, so far as the Harriman system is concerned, a marked improvement in the quality and a diminution in breakage of rails in the last three years. The number of rails breaking during the first year of service, which is their critical period under traffic, has fallen in that time from about one rail in 370 to one in 3,670, with an increase of tonnage, and but for an unfortunate manufacturing error, which was very soon discovered and corrected, it would have approximated one rail in 7,000. This appears to be really a not unreasonable proportion obtained in an article manufactured in large quantities, and it certainly shows that the above efforts on the part of this railway system, together with the efforts of the mill people to improve their mill practice, have resulted in a good output.

I hardly think that any manufactured article will show a very much higher quality than this. Of course, we are not satisfied short of perfection, we want no rail failures at all and are striving honestly, as I believe the manufacturers are, to obtain this result. I do not think it fair, therefore, to attack rail manufacturers or the railways on the ground that the best possible is not being done. It would be as fair to attack manufacturers of automobiles or the purchasers thereof, if an accident should occur from the failure of an axle or steering gear of one automobile in 7,000 manufactured and used.

In presenting the above figures there will naturally occur to you a question as to their accuracy and as to our methods of obtaining them, and it may not be out of place for me to describe the system on the Harriman Lines in this connection.

There are two opportunities of error in all such reports: First, in the information supplied; second, in the compilation.

The former is the more apt to be incorrect. Anticipating this trouble from the beginning, the Harriman Lines' officials have taken particular pains to personally instruct all section foremen and roadmasters, who are in immediate contact with rail conditions, in the details of inspection of broken rails, and we require their immediate superiors to check their reports. We have seen that the results of their reports get back to them individually, so that they may understand and appreciate the use and importance thereof. They have been individually instructed in case of doubt as to the nature and cause of a break always to place it in the unknown class, so that the causes specifically stated are undoubtedly correct. The large number of intelligent inquiries we have had from these men lead us to believe that their reports are carefully and conscientiously made. The results are worked up by the different general managers having jurisdiction and sent to the Chicago office, where they are again checked and compilation made and gone over, so that I may state with confidence that I believe the figures above given may be relied upon, and I further believe that the specifications of the Harriman Lines, if rigidly lived up to by the manufacturers, followed up by a proper inspection, give us as good rail as it is possible to produce under the present state of the art.

JOHN D. ISAACS,
Consulting Engineer, Harriman Lines.

CLASSIFICATION SIGNALS.

ROSEVILLE, CAL., November 10, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In your issue of October 13, "D. A. D." maintains that it is an insufficient safeguard to require classification signals on no trains except a train with a section following or an extra train. His argument is that some sort of signals should be carried by an "only section," to give positive indication of no section following.

This suggestion is a good one as far as it goes. It could be augmented by requiring that classification signals should be carried on the rear as well as the head end of a train. Often at a station the train crew may be busy cooling a hot journal, or perhaps they are inside a box car unloading freight. They are anxious to gain every possible minute, and consequently do not see the engine of a passing train until too late to note the signals carried. In such a case, if classification signals were carried also on the rear of the train they would be observed. There seems to be no logical reason why classification signals, like indicators, should not be shown at both ends. Such an arrangement would also benefit station and yard employees and trackmen. The latter, on the approach of a train, are usually busily engaged tamping the last tie or driving a final spike. But while they may not closely observe the engine, they always look at the rear car to see whether the roadmaster is on board.

The use of positive classification signals for "only sections" would give other advantages. The danger of careless mistakes on the part of conductors while checking the train register would be lessened. In the "signals" column of the train register, conductors either write "white," "green," or "none." Occasionally "none" is written instead of "green." If "only sections" carried signals, yellow for instance, the conductor would write "yellow" instead of "none," again something positive.

Operating officers would have more opportunity than at present to test the observance of classification signals, for the signals of an "only section" could be removed without risk of causing a collision, in order to note whether their absence is observed by train and enginemen. At present the removal of green signals from an engine for a test would be foolhardy; and, in the case of an engine of a regular train without signals, there is no way of telling whether or not proper observance has been made.

Granting that signals denoting "only section" are desirable, the next question is the proper selection of colors. If we strictly conform to the meaning of the various colors, yellow, being a caution signal, should mean "section following," and

green, being proceed, should mean "only section." The objections to this are threefold. First, the new order would change the long established meaning of green lights on an engine. Second, it would be necessary to revise the book of rules, particularly the artistically colored prints of "Engine running forward by day," etc. Third, there would be danger of yellow classification lamps being mistaken for the white lamps of an extra, perhaps with disastrous results. On the other hand, if, as at present, we use green for section following, and then add yellow for only section, no previous rule would be altered. All that would be necessary would be to issue a paster supplement to the book of rules, showing the additional signals. Also, if the yellow lights of an only section happened to be mistaken for the white lights of an extra, the risk of collision would be but slight, and in such a case the indicators should verify the signals.

The bull's-eye lantern, which would be the rear classification signal by night, should be so designed that different colored lenses could be interchanged in it, thus reducing the amount of equipment necessary.

M. B. WHITNEY,

Student in Railroad Operation, Southern Pacific Company.

[We will venture one or two suggestions. To partly excuse trainmen for not seeing the engine will be as bad as wholly excusing them; and to allow two chances to see the classification signals might be less satisfactory than to concentrate effort and attention on one chance. Do not be afraid of disturbing long established usage, when that usage, as is the case at present with green lights on the front of engines, perpetuates an inconsistency. Do not be afraid of disturbing the artistic illustrations of the rule book. A revised book once in a while may be useful on general principles. At all events, it is our observation that nearly every road makes a revision occasionally. Finally, do not be afraid of being radical. The *Railway Age Gazette's* remedy for the faults of classification signals is to use the block system and do away with such signals entirely.—EDITOR.]

GOOD STYLE IN RAILWAY PUBLICATIONS.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The success of your prize competitions suggests the propriety of offering prizes in other departments—as, for example, in the literary shop. You have reprinted a number of circulars addressed by railway managers to their employees on the subject of courtesy, and it must be that these circulars have produced good results. The last word has not been said, however. There is room for variety in this feature of the business, and it will be a good thing if other managers, not resting satisfied with what has been done by the pioneers, try their own hands at lecturing—lecturing by circular, I mean. (Such amateur productions should of course be submitted to a severe committee before being promulgated.) As a contribution, I submit as an excellent example of good sense, brevity and refined taste the circular issued by the Postal Telegraph Company (see below). This is signed by Edward J. Nally, vice-president of that company, and therefore the prize does not go to your correspondent.

ANON, LITERARY AGENT OF THE X, Y & Z.

"THE EMPLOYEE IS THE COMPANY."

"It is a fact that the public regards the representatives it meets and with whom it transacts business as the company itself. We know this from our personal experience in stores, for instance. If we are well treated by the clerks, if they are pleasant and affable, if they impress us by their alertness and their knowledge of their business, our trade naturally gravitates toward that store. We like to go there; we are glad to tell our friends about it and to influence their patronage in that direction. So it is with the representatives of the Postal Telegraph. The public receives its idea of the company largely through you. You are the ones they meet and from whom, as a rule, they form their impression of the company itself. Hence it behooves all to be efficient, alert, honest and obliging, since in so doing we not only build character for ourselves, but we likewise give character and reputation to the company we serve."

RAILWAY OFFICERS ON THE SITUATION AND OUTLOOK

In accordance with its annual custom, the *Railway Age Gazette* has sent out to a number of railway executive officers inquiries regarding their views on the present railway situation and the outlook. A number have responded to our inquiries, and our questions and their answers are given below.

QUESTION 1.—DO YOU FEEL THAT THERE HAS BEEN ANY CHANGE IN THE ATTITUDE OF THE PUBLIC, AND PARTICULARLY IN THAT OF THE SHIPPERS, IN YOUR SECTION TOWARD THE RAILWAYS SINCE THE "RATE ADVANCE" DECISIONS WERE RENDERED BY THE INTERSTATE COMMERCE COMMISSION, AND, IF SO, WHAT IS THE NATURE OF THE CHANGE AND TO WHAT DO YOU ATTRIBUTE IT? WHAT, IN BRIEF, IS YOUR ROAD DOING TO IMPROVE ITS RELATIONS WITH THE PUBLIC?

ERIE RAILROAD.—I do not think there has been a change in the attitude of the public towards railways; and, in this, I differentiate from the public, the shipper. The portion of the public which is clamoring for the persecution of railways is to be differentiated from that portion who may be designated as shippers. The shipper as I know him has the best of feeling towards the railways as a whole. The Erie Railroad is doing nothing to improve its relations with the general public, beside promulgating, from time to time, various documents, which, if read, would enlighten it on the situation.—*Frederick D. Underwood, President.*

ROCK ISLAND LINES.—I feel that there has been a change in the attitudes of public and the shippers. Since the rate advance decisions were rendered by the Interstate Commerce Commission there is decidedly more tolerant spirit and I attribute it, first, to the fact that many people have been led to give the matter some personal investigation by reason of the publicity of the matter, and, second, the inability of the railway to spend money for improvements and equipment has resulted in reducing the business of shippers, which has led them to investigate, and they have ascertained that their business is more largely affected by the inability of the roads to spend money than they had ever before known. As to what this road is doing to improve its relations with the public: First, we are giving them the best service possible; second, we are giving more attention to the matter of publicity.—*H. U. Mudge, President.*

DELAWARE & HUDSON.—I think there has been a marked change in the feeling of the public toward the transportation companies, brought about by a greater effort on the part of the transportation companies to make clear to the public, or explain to the public, various complicated matters; also, the large industries, other than the railway industry, have felt it desirable to use their influence with the public on behalf of the railways.—*C. S. Sims, Second Vice-President and General Manager.*

KANSAS CITY SOUTHERN.—The public is possibly coming to understand that a general advance in rates would be negligible in its individual effect, but the shipper is the protester, and I think is unchanged in his determination not to permit it. We are, through dissemination of literature and bulletins, endeavoring to bring before the public the facts as they exist, and by fair treatment and constant effort to give good service we are trying to make our relationship with the public one of mutual benefit.—*J. A. Edson, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I do not know that there has been any change in the attitude of the public, or the shippers, in our section since the "rate advance" decisions were rendered by the Interstate Commerce Commission. I believe the change in attitude of the citizens in favor of seeing that the railways are given proper treatment, which sentiment started

a year or two ago, continues. Our road is doing everything possible to improve its relations with the public.—*J. Ross Clark, Second Vice-President.*

ROAD A (SOUTHWESTERN).—In my opinion there has been no particular change of sentiment one way or the other since the "rate advance" decisions were rendered by the Interstate Commerce Commission. I have not personally been able to find anyone whose views have undergone any decided change since that time. Many of the larger individual shippers have for a long time past been against restriction in the matter of changes of rates, and have only insisted that no discrimination be created. The volume of the rates in themselves has not been a matter of concern so long as the rates were equitably adjusted. I do not believe that the great mass of the people have changed their views, and I think that to a great degree they are antagonistic to the railways. Our principal effort to improve our relations with the public is in reasonable and proper demands and by close association through official representatives.—*Vice-President and Traffic Manager.*

ROAD B (WESTERN).—I think there has been some change in the attitude of the public and of shippers towards the general business of railroading. I think shippers are beginning to feel more than they did a few years ago that the railways are not as black as they are painted, and that the general business of the country will be advanced if the railways are allowed to make fair returns on their property. Our road is doing the following kinds of work in connection with the public: Our local men everywhere are requested verbally to keep in close touch with all patrons of the road; to discuss complaints freely and try to remedy them at once; to know personally editors and others connected with the daily newspapers, and to have friendly relations with them. We endeavor to settle claims very promptly and to meet the views of the public, so far as we can, with service. This latter question is a most difficult one, because in a very proper effort to have low operating costs and efficiency in railway service we run counter to the demands of the public for more expensive passenger stations, more expensive passenger trains, fast freight trains, frequent switching, etc. From my office we send out to all of the newspapers such literature as we can obtain that gives the railway side of the general discussion that has been going on during the last few years. I think we have now a list of something like 50,000 names, to whom we send more or less stuff from time to time. We send out a good many of Slason Thompson's pamphlets, material prepared by the Bureau of Railway Economics, and I have made a good many public addresses during the past year, some of which have been printed, and those we distribute. Whenever we make inspection trips on the road, we try to stop at some point of more or less importance in the evening and attend a meeting with the citizens at the Commercial Club, or other social hall.—*President.*

ROAD C (EASTERN).—I do not think conditions have substantially improved. We are trying to sit still and saw wood.—*President.*

ROAD D (SOUTHEASTERN).—There has been a change for the better in the attitude of the public toward the railways. The roads I represent are doing only what has been practiced for a number of years—keeping in touch with the local conditions and remedying abuses when discovered.—*President.*

ROAD E (WESTERN).—I have found a very decided change in the attitude of the shipping as well as the general public toward railways, but I do not date any of it from the "rate advance" decisions of the Interstate Commerce Commission. The general attitude of thinking business men is that the railways have been punished instead of regulated, and that the reflex has been disastrous to general business. I find also the feeling becoming

daily more general that the railways are honestly and conscientiously endeavoring to occupy a correct relation with the public, and that this effort should be sympathetically met. This company is systematically extending the acquaintance of its general officers with the public; co-operating with every public instrumentality; in fact, doing everything possible to secure recognition as a constituent part of the business world, entitled to the same consideration given to other business interests, and asking no more.—*President.*

ROAD F (SOUTHWESTERN).—There has undoubtedly been some change in the attitude of the public, particularly shippers, in the past year. I think a part of this is due to the publicity given the railway's side of the question. We are making an effort to meet the wishes of the public where possible, and where such requirements are reasonable. If unable to meet them, we endeavor to explain the situation and show our side of the question.—*Vice-President and General Manager.*

ROAD G (CENTRAL).—There has been a slight change for the better. The swing of the pendulum of public opinion is slow, but very sure. It is important that there is a slight improvement. We must bear in mind that large bodies move slowly. The only thing we are doing to improve our relations with the public is to do the best we can in the direction of fair treatment and frank and straightforward dealing.—*President.*

ROAD H (WESTERN).—The attitude of the public in the territory traversed by this road is quite friendly, markedly so compared with several years ago. I do not feel that the "rate advance" decisions of the Interstate Commerce Commission had any bearing. We have our differences with shippers as to rates and facilities, such as necessarily arise and will continue to arise in all business enterprises, but in the majority of cases the differences are amicably adjusted without engendering much, if any, ill will. Our officials have constantly endeavored to improve their relations with the public. First, by efficient service and by the development of the property. In the second place, by dealing frankly with the public on all questions of public interest. We have had the assistance of our employees in all branches of the service, who are considerate of the rights of the public, and courteous in the treatment of shippers and passengers. Frequently the officials visit towns and cities located along the line, by invitation attending public meetings, banquets, conventions, and gatherings, where the officials and the public mingle with each other in a business and social way.—*President.*

ROAD I. (EASTERN).—There has been a marked change in the attitude of the public generally and of shippers in our section toward the railways during the last year; their sentiment toward the carriers is markedly more friendly. The change is due to several causes. Many persons, including not a few shippers, felt that the railways were entitled to some increase in rates, and believed that they were hardly dealt with when the Interstate Commerce Commission refused to permit any advances. The change in the attitude of the public toward the railways has also been largely due to the change in the attitude of many railway men toward the public. We are coming to realize better than we ever did before, and frankly to concede, that we are servants of the public as well as servants of our stockholders, and this attitude on the part of railway men naturally impresses the public favorably. Five years ago out of 100 articles having reference to railways, taken from as many newspapers, at least 65 would have been hostile to the roads, and the remaining 35 would have been indifferent or lukewarm in their support. Out of the same number of articles now 90 per cent. would be distinctly favorable to the roads and practically none would be distinctly hostile. Our road is trying to better its relations with the public by making extensive improvements, giving better service, and through its officers frankly discussing with the shippers and the public the different matters in which we are mutually concerned.—*President.*

ROAD L (SOUTHEASTERN).—In a general way, I believe that the feeling of the public (always excepting the "noisy politician") towards the railways is slowly growing better, because of the

conservative and co-operative spirit exhibited by the roads, but that the selfish hostility of shippers to increases in rates is still being manifested by the almost universal suspension by the Interstate Commerce Commission of all tariffs filed making advances in rates.—*President.*

QUESTION 2.—DO YOU FAVOR REGULATIONS OF THE ISSUANCE OF RAILWAY SECURITIES? IF SO, BY THE FEDERAL, OR THE STATE, AUTHORITIES? WHAT, IN A GENERAL WAY, ARE THE REASONS FOR YOUR ATTITUDE TOWARD THIS SUBJECT?

ERIE RAILROAD.—I am in favor of the regulation of the issuance of railway securities by a federal authority, for the reason that such regulation will bring about a better market for them.—*Frederick D. Underwood, President.*

ROCK ISLAND LINES.—I do not favor regulation of the insurance railway securities by either federal or state authorities at this time, but it must be evident that if this is done it can only be effectively done by the federal authorities. My objection to having the matter tampered with at present is that it will affect present value of securities already in existence and which the public has purchased in good faith, and will make the condition of those roads that are already highly capitalized worse than at present.—*H. U. Mudge, President.*

DELAWARE & HUDSON.—It would be a mistake for the state authorities to attempt the regulation of railway securities, and as most states are now attempting such regulations, it would be very much better to have it done by the national government.—*C. S. Sims, Second Vice-President and General Manager.*

KANSAS CITY SOUTHERN.—The investing public is entitled to know that securities purchased are backed by substantial values, and reasonable regulation would seem to me not to be improper. I would favor federal authority, insuring uniformity, as against conflicting and varying regulations by the different states.—*J. A. Edson, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I believe the day of regulations for the issuance of railway securities is coming. Such regulation should be by the federal government; state regulations would be disastrous. While the railways at this time may take the same view of the regulation of securities as they first took of any governmental regulations, I believe the railways would have nothing to fear and that they, as well as the public, would be benefited thereby.—*J. Ross Clark, Second Vice-President.*

ROAD C (EASTERN).—I do not. It has always been very hard for the railways to raise money, and the interference of commissions makes a hard matter harder.—*President.*

ROAD D (SOUTHEASTERN).—I have not formed decided views respecting this matter.—*President.*

ROAD E (WESTERN).—I am a firm believer in federal regulation, believing state control to be destructive, while federal control can be constructive. Believing in this, I could not consistently argue against regulation of securities, and therefore favor it.—*President.*

ROAD F (SOUTHWESTERN).—Am not adverse to the regulation of the issuance of railway securities. Most of the states through which we operate already do so.—*Vice-President and General Manager.*

ROAD G (CENTRAL).—I think we should go very slowly in imposing any new regulations. We have a lot of undigested regulations still weighing uncomfortably upon our stomachs. This does not mean that I am against regulation, but against adopting regulations more rapidly than they can be absorbed into the system.—*President.*

ROAD H (WESTERN).—We are not in favor of regulating the issuance of railway securities. It is a matter which will take care of itself if left alone. The control by different states is conflicting, and creates difficulties in preventing extensions and development, which the public desire, as the development in one state may be well up to its necessity, while in another state

much remains to be done in the way of new extensions. This only harasses and embarrasses the development of the country and the development of the transportation lines, and makes the securities less desirable to investors, so that the money is invested elsewhere, or in other countries.—*President.*

ROAD I (EASTERN).—I am in sympathy with the views regarding regulation of railway securities expressed by the Hadley Railroad Securities Commission in its reports, which was sent to Congress by President Taft on December 11.—*President.*

ROAD L (SOUTHEASTERN).—Inasmuch as corporations are creatures of government—that is, they have no right to exist except under general or specific authority of the body politic—it seems clear that the latter should have full and explicit information or the issuance of railway securities. As one most important function in government is the protection of its subjects against the self-seeking and designing, whether at home or abroad, it is reasonable that the government should be fully advised and be in a position to exercise its influence in favor of the reasonableness and soundness or corporate security issues. I, therefore, do not favor regulation of the issuance of railway securities either by federal or state authorities.—*President.*

QUESTION 3.—DO YOU FAVOR NATIONAL LEGISLATION FOR THE FEDERAL INCORPORATION OF CORPORATIONS DOING AN INTERSTATE BUSINESS, OR ANY OTHER LEGISLATION BY CONGRESS THAT WILL TEND TO REDUCE REGULATION BY THE STATES, AND TO CONCENTRATE IT IN THE HANDS OF THE FEDERAL GOVERNMENT?

ERIE RAILROAD.—While I am not in favor of any further legislation in relation to corporations, federal is preferable to state legislation. It is perhaps time to again call attention to the present ridiculous and impossible situation—forty-six state railway commissions and a federal commission, all seeking to regulate railway corporations.—*Frederick D. Underwood, President.*

ROCK ISLAND LINES.—I favor action that will concentrate railway legislation in the hands of the federal government and take away all such authority from the states, except such as is necessary for police regulation.—*H. U. Mudge, President.*

DELAWARE & HUDSON.—The situation, where the several states attempt regulation, is almost intolerable. Regulation has come to stay, and it should, therefore, be in the hands of the national, and not the state, government.—*C. S. Sims, Second Vice-President and General Manager.*

KANSAS CITY SOUTHERN.—Am in favor of anything that will concentrate and simplify such regulations as may be proper, and this would seem to be possible only through national control, to the entire exclusion of state authority.—*J. A. Edson, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I strongly favor national legislation for incorporation of corporations doing an interstate business that will have a tendency to reduce state regulations.—*J. Ross Clark, Second Vice-President.*

ROCK ISLAND LINES.—It is essential that the regulation of interstate carriers be concentrated in the federal government rather than subjected to the diverse views of forty-nine different governments. This is so clear that no argument is required. Can this be done best by means of legislation specifying federal incorporation or by other methods? I do not know but that the establishment of minimum requirements by Congress of standard practices and the commitment of the Interstate Commerce Commission to these requirements would seem to accomplish the purpose.—*F. O. Melcher, Second Vice-President.*

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—While I have not been able to give detailed consideration to the matter, my first impression is that federal incorporation of corporations doing an interstate business would be advisable.—*T. C. Powell, Vice-President.*

ILLINOIS CENTRAL.—It would seem essential to a clear understanding as to just what corporations are empowered to do, and what they are prohibited from doing, that the regulations should

come from one source, which would necessarily be the federal government.—*W. L. Park, Vice-President and General Manager.*

ROAD A (SOUTHWESTERN).—I think that legislation that would tend to reduce regulation by the states and to concentrate it in the hands of the federal government would be in our interest in that such regulation would be uniform and would not subject us to varying rules in sections separated only by state lines, and it would remove the ever-present contest between the various states as to adjustments within their borders, each seeking advantages as to rates and regulations over other sections. The fact that the state commissions are as a rule elected serves to make them political bodies, and so long as the members are subject to re-election their views must be influenced by prevailing public sentiment without regard to the inherent merits of many cases presented for their consideration.—*Vice-President and Traffic Manager.*

ROAD B (WESTERN).—I have been rather opposed to extending the federal power over so many details of local business, but I am drifting to the conclusion that the complications are so great now that probably federal incorporation and federal supervision will be better than so much half-baked legislation and regulation from the states.—*President.*

ROAD C (EASTERN).—Yes.—*President.*

ROAD D (SOUTHEASTERN).—Federal incorporation and responsibility of interstate railways to a federal commission only.—*President.*

ROAD E (WESTERN).—I am not clear as to what legislation is needed or proper to bring about federal and eliminate state control. I have firmly believed that when the Supreme Court finally speaks on this much-mooted question it will be a practical elimination of the state, and that further legislation would be unnecessary. If I am mistaken in this and if the Supreme Court stops short of such a decision and the same can be secured through legislation, then naturally I favor the latter.—*President.*

ROAD F (SOUTHWESTERN).—Am in favor of so-called "federal incorporation," particularly so far as interstate carriers are concerned.—*Vice-President and General Manager.*

ROAD G (CENTRAL).—I am inclined to think that federal incorporation is the best way to settle the trust question. Slow and intelligent progress is better than rapid and unintelligent work, which either has to be undone or done over again.—*President.*

ROAD H (WESTERN).—The courts should be able to handle the situation without further legislation. If the laws of the various states interfere, as they do, with the handling of interstate commerce, it is entirely within the province of the Supreme Court to so declare, and any relief which the railways are to obtain by reason of conflict of jurisdiction of state and federal authorities, must come through the courts.—*President.*

ROAD I (EASTERN).—I question if any further regulation of railways is desirable at this time, unless it should be an amendment of the Sherman anti-trust law which would permit the railways freely to take reasonable concerted action regarding rates and services, and some such legislation as that recommended by the Railroad Securities Commission. It would be impossible for them to take anything but reasonable concerted action, if the Sherman law were amended, because if they attempted to do otherwise the Interstate Commerce Commission has power to prevent them.—*President.*

ROAD J (SOUTHEASTERN).—I am in favor of national legislation that will place in the hands of the Interstate Commerce Commission the full control of railway operation, eliminating the frequent clashes between state and federal authorities.—*Vice-President and General Manager.*

ROAD K (EASTERN).—Yes. The various laws that have been passed by the different states on matters affecting railway operation are not uniform. If the present process of law making by the states continues, in a short time there will be as many different laws on the same subject as there are states. For example, there are five regulations issued by as many states—all different—as to the kind of highway crossing sign to be erected at highways. The commissioners of Indiana have ordered a horizon-

tal board in addition to the ordinary conspicuous sign with the word "danger" in red, and they have the assurance to specify in their annual report that there has been a great reduction in the number of accidents at highways by reason of this sign. The best experts in block signaling have concluded a long time ago that overlap signals were dangerous, because engineers quickly discover where the overlap is, and in approaching a stop signal have in mind the possibility of over running the signal and not being detected by reason of the overlap, and yet, an inspector of the commission in one of the largest states in the Union is urging that the railways adopt the overlap. It goes without saying that none of the executive bodies, either federal or state, have any valuable knowledge of railway operation. Their knowledge is that of the layman. Their views are absorbed from their inspectors. As the federal government under Mr. Moseley insisted that the necessary qualification of an inspector of safety appliances was that he should be a member of a labor union, it is quite evident that the recommendations of such men, who are largely brakemen, baggagemen and conductors, cannot be of an impartial character; therefore, the railways are not fairly treated in the matter. The inspectors employed by the state commissions are largely railway employees who have either not succeeded or have succeeded partially in the profession of railroading, and their knowledge is not good. If the state regulation of transportation could be eliminated and concentrated in the Interstate Commerce Commission and that body included some competent operating men, many of the difficulties to which the railways are subjected would be removed and greater difficulties which are to come would be postponed altogether. There seems to be no reason why a full crew bill specifying 25 cars is ideal in one state and one of 50 cars in another; they cannot both be right.—*Vice-President.*

ROAD L (SOUTHEASTERN).—I am not yet prepared to speak positively for or against federal incorporation for interstate corporations. I would recommend that nothing be done in this connection until other uncertainties are cleared up and a better judgment can be formed as to the favorable and unfavorable aspect of federal incorporation. I incline to believe, however, that popular opinion will favor it.—*President.*

QUESTION 4.—WHAT LEGISLATION BY CONGRESS, IF ANY, DO YOU THINK JUSTIFIABLE OR DESIRABLE WITH A VIEW PARTICULARLY TO MAKING THE RENDERING OF THE TRANSPORTATION SERVICE OF THE COUNTRY SAFER, MORE ECONOMICAL OR BETTER?

ERIE RAILROAD.—No legislation is necessary or justifiable with a view to improving the transportation service, making it safer or more economical. Competition between lines will take care of that far better than statute.—*Frederick D. Underwood, President.*

ROCK ISLAND LINES.—I think no legislation by congress is necessary at this time to render the transportation service in the country safer, more economical or better. The roads are apparently applying block signal protection as fast as their finances will permit.—*H. U. Mudge, President.*

DELAWARE & HUDSON.—The present powers of the Interstate Commerce Commission are very great. They have inspectors overlooking telegraph train orders, signals, safety appliances, etc., etc., etc. For the present, I think, no additional legislation is necessary.—*C. S. Sims, Second Vice-President and General Manager.*

KANSAS CITY SOUTHERN.—I see no necessity for any further legislation to make transportation service safer, more economical or better in any way; the railways themselves will work it out as conditions demand and opportunities permit.—*J. A. Edson, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I favor no further legislation by Congress for the next two or three years, so as to give the railways a breathing spell and a chance to line up and get working under the laws that have already been passed.—*J. Ross Clark, Second Vice-President.*

ROCK ISLAND LINES.—Let us defer further legislation until the present and existing laws are intelligently administered by government officers. The ability of the Interstate Commerce Commission to administer our present multitude of laws has yet to be demonstrated.—*F. O. Melcher, Second Vice-President.*

ILLINOIS CENTRAL.—I think very little regulation by Congress, other than that which will provide sufficient revenues, is necessary in rendering the transportation service of the companies safer and more economical. The managers are ready to spend money available in the direction which, from their knowledge of the property, will give the best result. On some railways it may be ballasting and heavier rail; on others, the question of bridges may be paramount; on others, block signals. Some of the laws so far passed, under the pretext of adding to the safety of the public and employees, such as a great many features of the safety appliance act, standardization of equipment, full crews, etc., have caused and will cause an enormous and unnecessary expenditure without commensurate returns to the public, and must necessarily retard the doing of those things that from the experience of the managers acquainted with the property in their charge they well know to be of greater importance, for the reason that a large part of the above expenditure is waste.—*W. L. Park, Vice-President and General Manager.*

ROAD A (SOUTHWESTERN).—It seems to me that legislation is unnecessary to make the transportation service of the country safer, better or more economical, as competition between the railways prompts each to make its service as safe and satisfactory as possible. I have never known any legislation which looked to greater economy in operation. I would regard a bill authorizing pooling as a measure in this direction in that under an agreed division of revenue much service that is now rendered, and which under the present stress of competition it is necessary to maintain could be eliminated without injury to the public interest.—*Vice-President and Traffic Manager.*

ROAD B (WESTERN).—In due time public opinion, or legislation, or both, will have to bring about a condition in this country so that the arbitrary stoppage of safe, regular and adequate transportation by strikes will be impossible. Just how this can be done, I am not prepared to say. I have a feeling, however, that the time will come when a man who engages in the railway business will be under the same sort of moral, and possibly under the same sort of legal, obligations that a man is who enters the army; that he will have no more right to desert the railway than he has to desert the army; that he can only leave it under certain prescribed rules, and that if he leaves it or deserts it some sort of punishment will be meted out to him. The complications of modern industrial life are such that society sooner or later will have to invent some plan so that all business will not be dislocated and great suffering brought to innocent people because of the arbitrary actions of large bodies of men upon whose daily work depends the general life of the community.

Another place where public opinion should introduce some corrections is the wild demand for high speed, both freight and passenger. Apparently the railways cannot resist this demand, and it may be that some law limiting speed would be helpful in producing safer, more economical and better transportation service. Every now and then we have some bad accident, due in part to the mania for speed, and in part to poor work done by human hands at some point in the mechanical or operating process of the railway.—*President.*

ROAD C (EASTERN).—Neither Congress nor the commissions ever originate any improvement. They find out what the roads are trying out and then order it used and claim all the credit. In so doing they usually fail to allow for variations in the conditions pertaining to different localities and companies, and by insisting upon uniformity of treatment where there is no uniformity of needs, they often bring about more serious evils than those they attempt to remedy.—*President.*

ROAD D (SOUTHEASTERN).—Apparently no additional legislation necessary.—*President.*

ROAD E (WESTERN).—I have no suggestion to make at this time about legislation favoring the transportation service. I believe that with the possible exception of automatic signaling, which will come gradually, there is nothing particularly needed if the federal statutes only could be applied and the conflicting state regulations eliminated.—*President.*

ROAD F (SOUTHWESTERN).—I do not want to be quoted as favoring additional legislation, either state or national. We have had entirely too much as it is. What the carriers need is legislative rest and an opportunity to adjust themselves to present conditions.—*Vice-President and General Manager.*

ROAD G (CENTRAL).—The railways will take care of this, as a matter of self-interest, very rapidly, if their credit is restored. Unsafe operation is very costly operation, as every railway manager knows. A greater spread between gross and net earnings will do more towards securing safer operation than all the laws that could be framed.—*President.*

ROAD H (WESTERN).—No additional legislation by Congress is necessary. We have plenty of it now. More than can be or is enforced. Problems ought to be worked out along existing lines and changes adopted as they are found impracticable. The railways should be permitted to go on and develop their business and the business of the country without being constantly terrorized by the fear of new legislation changing continuously the methods of transacting railway business.—*President.*

ROAD I (EASTERN).—As I said in my answer to question 3, I do not think any further federal legislation regarding railways is desirable at this time, with the possible exceptions mentioned.—*President.*

ROAD J (SOUTHEASTERN).—The most important legislation to the commercial world as well as the railways at present, to my mind, is an amendment to the Erdman Act making arbitration compulsory, to avoid the possibility of tying up the commerce of the country on a pretext because of unsatisfied greed or disgruntled labor organizations.—*Vice-President and General Manager.*

ROAD K (EASTERN).—In my opinion, what is needed is an intelligent joint investigation by railway officers and the Interstate Commerce Commission of accidents; the allowance to the roads of sufficient revenue to meet the necessary requirements; the elimination of the expenditure of money that is now spent foolishly and largely for the political benefit of the labor organization as a result of crew laws and other similar legislation.—*Vice-President.*

ROAD L (SOUTHEASTERN).—No legislation by Congress is justifiable or desirable with a view particularly to making the rendering of transportation service of the country safer, more economical or better. It can safely be left with the managers of the railways of this country to render the transportation service safer, more economical and better if the public will withdraw its position against a moderate advance in both freight and passenger rates, and enable the railway companies to earn a sufficient amount of money to pay for labor and material and to increase efficiency of their properties without unreasonably increasing their fixed charges, being mindful that the owners of the property are entitled to a reasonable return on their investment.—*President.*

QUESTION 5.—THERE CAN BE NO DOUBT THAT THE CONTINUANCE OF BUSINESS DEPRESSION DURING THE PAST YEAR HAS BEEN LARGELY DUE TO THE FACT THAT IT HAS BEEN A YEAR OF RETRENCHMENT BY THE RAILWAYS. TOWARD THE CLOSE OF THE YEAR 1911 THERE HAS BEEN A SUBSTANTIAL INCREASE IN PURCHASES OF EQUIPMENT AND SUPPLIES. DO YOU THINK THE RAILWAYS WILL SPEND MORE OR LESS MONEY ON MAINTENANCE, IMPROVEMENTS AND ADDITIONS AND NEW CONSTRUCTION NEXT

YEAR, AND WHY? HOW, IN A GENERAL WAY, DO YOU REGARD THE BUSINESS OUTLOOK FOR 1912?

ERIE RAILROAD.—The expenditures to be made by railways are not within my information. Railways will continue to spend as little as possible on maintenance and improvements and to refrain from additions or new construction until there is a better market for securities. The causes of the depression in the security market are so well known as to require no discussion.—*Frederick D. Underwood, President.*

ROCK ISLAND LINES.—The railways must purchase an average amount of equipment, first, to provide for replacement of obsolete and destroyed equipment, and second, to take care of the natural increase in traffic that we know must come. The large purchases made recently are due to the very low prices, the reduction in the price on freight cars from that purchased last year being equal to about five years' interest on the money. With this in view, it is easily seen why the railways feel that they can afford to borrow money and purchase equipment, even though it is not needed at present. I do not think the railways will spend more money on maintenance, improvements, additions or on construction next year, because it does not appear that conditions will be sufficiently settled to enable financing to be done for this purpose. I do not regard the business outlook for 1912 as being very encouraging. I think we may possibly get through without further serious decreases in earnings, but I can see no reason to expect any increases.—*H. W. Mudge, President.*

DELAWARE & HUDSON.—The railways are still retrenching. The year 1912 is apt to carry with it a great deal of politics, and politics have never been known to help business. I am inclined to feel the railway retrenchment will continue until the political situation has been cleaned up.—*C. S. Sims, Second Vice-President and General Manager.*

KANSAS CITY SOUTHERN.—The dissolution of large business interests and the general attitude of federal and state governments have tended toward depreciating securities, rendering capital expenditures inopportune, and this very condition depressing business in general has so reduced railway earnings that maintenance expenditures have been held within strict limits. Expenditures by railways will no doubt conform to these conditions for 1912 as in the past. The action of federal authorities and public declarations of men in political power having in the past few months indicated a tendency toward sane control of corporate interests may restore confidence to business interests in general. Large purchases by railways of equipment, as reported within the last 90 days, will stimulate business, and a brighter outlook seems dimmed only by the customary depression of a presidential campaign.—*J. A. Edson, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—I regard the business outlook for 1912 in a general way as good, but it being a presidential election year the tendency may be to curtail some improvements.—*J. Ross Clark, Second Vice-President.*

ROAD B (WESTERN).—I think the railways are apt to spend a little more money on maintenance, improvements and additions in 1912 than in 1911, but I am doubtful about new construction. There is not much incentive for capital to go into large new railway enterprises when the Commerce Commission's general attitude is to reduce rates steadily, the tax powers' attitude is to raise taxes steadily and the labor union organizations to increase wages steadily. I think the volume of business for 1912 in our territory will be about the same as for 1911, possibly a little better. People are inclined to be more economical and save their pennies more than they did a year ago, and I believe this tendency will continue until after the presidential election. This tendency has a marked effect on passenger travel and on some classes of freight business.—*President.*

ROAD C (EASTERN).—I do not think earnings for the fiscal year 1912 are likely to be any better than for 1911. I do not expect much improvement during the next year.—*President.*

ROAD D (SOUTHEASTERN).—The business outlook for 1912 seems favorable. In my opinion, however, no extensive pur-

chases will be made by the railway companies. They will purchase only what is absolutely necessary.—*President.*

ROAD E (WESTERN).—I believe that the expenditures for improvements, additions and new construction in 1912 will not exceed the year now closing, for the reason that I do not in a general way regard the business outlook for the next year as more encouraging than the present year. It is a mistake, I believe, to construe the recent increase in purchases of equipment and supplies to presage a general resumption of prosperous conditions. It is, in my opinion, brought about by the fact that these purchases were enforced through depletion of stocks and simply to replace obsolete or destroyed equipment. Experience has shown that whenever Congress tackles the tariff question business marks time until they are through.—*President.*

ROAD F (SOUTHWESTERN).—The business outlook for 1912, in our section of the country, is favorable, although I do not look for any great improvement over 1911. So far as this company is concerned, we do not anticipate purchasing any great quantity of equipment and supplies during the coming year.—*Vice-President and General Manager.*

ROAD G (CENTRAL).—I do not look for any considerable improvement during the year 1912. I think we will not much more than hold our own with 1911.—*President.*

ROAD H (WESTERN).—With the proposed tariff legislation and the Presidential question, which has never failed so far to depress business, and with the large business interests apprehensive as to just what law means, we can see no marked improvement ahead of us of any considerable volume until after the next Presidential election, and not then if a candidate is elected who desires to further disturb the present business methods of the country. We have no intentions of making any great improvements and additions in 1912 except such as are required from a practical standpoint and business requirements.—*President.*

ROAD I (EASTERN).—I should assume that the railways of the country as a whole will find it necessary to spend substantially more for additions, improvements and new equipment in the calendar year 1912 than they have in the calendar year 1911, because there can be little question that during the past two years they have not been spending enough in proportion to the requirements that will be imposed on them when prosperity returns. As to new construction, I do not look for any considerable revival of it. Regarding the general business outlook for 1912, I think it is fairly good. That is to say, I do not expect to see any further shrinkage. The large orders for equipment that the railways recently have placed will keep many manufacturers of railway equipment busy for some months, and, indirectly, the effects of this will be felt throughout the country. However, in a presidential election year, and especially in one when there is so much agitation regarding regulation of business, it seems doubtful if there will be any great revival of business.—*President.*

ROAD L (SOUTHEASTERN).—In reply to this inquiry I can only speak in reference to the railway that I represent. It is not our purpose to spend more money on maintenance, improvements, additions and new construction next year, for the reason that we have maintained our property and made a reasonable amount of improvements, additions and such new construction as were necessary during the last and previous years. In a general way, the business outlook for 1912 is favorable to this company.—*President.*

QUESTION 6.—THERE HAS BEEN MUCH TALK RECENTLY OF RAILWAY "ECONOMY" AND "EFFICIENCY." WHERE DO YOU THINK THERE ARE THE GREATEST POSSIBILITIES OF INCREASES IN ECONOMY AND EFFICIENCY WITHOUT IMPAIRMENT OF THE SERVICE RENDERED THE PUBLIC?

ERIE RAILROAD.—Talk about "economy" and "efficiency" is largely by those ignorant of the subject, who are therefore prolific in discussion of it. No man can say where the greatest general possibilities for increases in economy and efficiency lie, as they are largely local to each railway.—*Frederick D. Underwood, President.*

ROCK ISLAND LINES.—I can only see one possibility for a very material increase in economy, and that is by reducing the running time of both freight and passenger trains. There has been a considerable saving made on the western lines in this way, but the tendency of some lines to break away makes it doubtful whether it can be maintained. I do not think this results in impairment of the service rendered to the public. I believe slower time freight trains with regular service is better than fast time with a percentage of trains off time.—*H. U. Mudge, President.*

DELAWARE & HUDSON.—Great economy can be brought about at many points in this country by doing away with unnecessary competition. In other words, cut out all unnecessary service. All over the country the income of passenger trains is generally less than the average train mile costs, showing too much passenger service, and yet if the railway officers attempt to take off a single train, regardless of whether it is profitable or unprofitable, there is a great public outcry and the matter is taken to the various commissions. The elimination of the state commissions and control by the national commission would protect such a situation.—*C. S. Sims, Second Vice-President and General Manager.*

KANSAS CITY SOUTHERN.—The greatest possibility of increase in economy and efficiency without impairing service lies, in my judgment, in the employees taking a proprietary interest in the operation and welfare of the roads, showing greater loyalty and industry, care to prevent accidents, handling freight and equipment with the least possibility of breakage and damage, stopping leaks and waste and utilizing to its fullest value every article used in conducting business; by general co-operation and "teamwork" in all departments.—*J. A. Edson, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—Considering their enormous size and the territory they cover, I consider the railways of the United States today the most economically operated of any of the great enterprises of the country. Considering the constant tendency to increase wages of all kinds without a corresponding increase in efficiency. I do not see any chance for further economy in operating expenses without impairment of the service rendered the public.—*J. Ross Clark, Second Vice-President.*

ROCK ISLAND LINES.—The greatest economy lies in the possibility of a reduction in the present prices of material. Under the present circumstances, the cost of labor cannot be reduced nor can the quality of material be lowered; in fact, it may have to be improved. If an investigation should develop that no reductions can be made in prices, we shall have to depend upon our present methods of introducing economies in all ways, each small but, in the sum total, great; we shall continue the course followed by the railways for many years which has enabled them to keep their operating costs at such low figure in spite of the increases in materials and labor.—*F. O. Melcher, Second Vice-President.*

ILLINOIS CENTRAL.—It is absolutely necessary that there shall be a better understanding with labor in order to effect shop efficiency. With the support of the public there are unquestionably opportunities of economizing on our railways in many directions. So long as every movement of this character is met with opposition by employees, who are able to control to a large extent local public sentiment sympathetically, almost insurmountable difficulties will be encountered. Large capital expenditures are necessary to make effective many economies not so controlled. A restoration of confidence could be brought about by according the railways fair treatment as to revenues, to the extent that the dividends may be assured, and reasonable surpluses created which will enable them to borrow money for the improvement of such facilities as will promote economy and efficiency; at the same time adding to the comfort of the public and bettering the service rendered to them.—*W. L. Park, Vice-President and General Manager.*

ROAD B (WESTERN).—The greatest possibility for increasing efficiency and economies lies, first, in giving up fast, elaborate and fancy passenger train service, and having substantial comfortable service. It makes little difference, really and truly,

whether a man goes between Chicago and New York in eighteen hours, or in twenty-four hours, or between Chicago and the Pacific Coast in seventy-two hours or in eighty hours, but the shortening of time means greater expenses in countless directions. The other point lies in getting a better quantity and quality of work out of every man employed. This probably cannot be accomplished until public opinion forces the labor unions to see that their real duty to society is to encourage increased output and loyalty to the enterprise paying the wages, rather than to encourage the reverse position.—*President.*

ROAD C (EASTERN).—By getting rid of the parasites, like the "full-crew" and other wastes forced on the roads by legislation.—*President.*

ROAD D (SOUTHEASTERN).—There are constantly railway economies being put into effect that result in improved efficiency as well as economy. I don't believe any economies are being put into effect that will result in impairment of service.—*President.*

ROAD E (WESTERN).—I have very little sympathy with the blanket attack on railway "economy and efficiency" and I do not believe that there are any glaring instances of neglect in this direction. I think any management will admit frankly that it is not coming up to its own reasonable expectations, but it would be a rare exception where the limiting conditions are not appreciated and where relief is not being earnestly sought. The most potent influence, of course, against correct economical measures is the attitude of organized labor, in the face of which railways are generally more helpless than any other employer, because of their widely separated operations.—*President.*

ROAD F (SOUTHWESTERN).—There has been entirely too much "talk" recently of railway "economy" and "efficiency." It is almost impossible to accomplish either without impairment of the service rendered the public. Competition between the carriers, as well as the several communities served, is keen.—*Vice-President and General Manager.*

ROAD G (CENTRAL).—Competition between railways has caused a good deal of duplication of service and a good many economic wastes which could be greatly reduced if railways were permitted to get together. Duplication of train service, both passenger and freight, unnecessarily high speed, duplication of ticket offices in big cities, economic waste in interchange facilities of both carload and L. C. L. freight in big cities, are all items in which much could be accomplished. If railways were free to act and were not hampered by federal legislation, much could be accomplished along these lines without any injury whatever to the general public. Dire necessity may compel the railways to make some of these economies, anyway.—*President.*

ROAD H (WESTERN).—This is a large question. Economy and efficiency, especially the former, are constantly affected by increased legislation, increased labor demands, shortening of the hours of work, penalizing the transportation lines for safety devices, the nine-hour law, the 16-hour law, the 28-hour law, and surrounding them with conflicting laws in the states. So that the only thing that we can do is to operate as economically as the conditions permit, for which we have trained and experienced men, who are making a constant life study of this question, as the foundation and the success of the official staff is economical and safe operation, meeting competition, and providing the necessary facilities for the public.—*President.*

ROAD I (EASTERN).—Probably the greatest opportunities for increasing the economy and efficiency of railway operation without impairment of the services rendered to the public are to be found in increases of the average train load. This can be accomplished without any impairment of the service if, on the one hand, we so discriminate between traffic requiring expedited movement and that which does not require such movement as to give each the sort of service that it requires. On the other hand, very substantial economies could be effected without injury to anyone by reducing the speed of many freight and passenger trains if only the railways and their patrons would properly and effectively co-operate to this end. Unfortunately, under present laws and under present conditions it is difficult for the railways to

so act together as to get the best results for all concerned.—*President.*

ROAD J (SOUTHEASTERN).—A great deal of economy without the loss of efficiency is possible to railway operation if only facilities necessary are demanded by the traveling public and ordered by the state corporation commissions instead of so many improved luxurious passenger coaches and passenger stations not justified by the density of traffic. At the present date the traveling public, backed by the corporation commissions of the various states, is demanded from railways accommodations which they do not receive at home and for which they do not pay.—*Vice-President and General Manager.*

ROAD K (EASTERN).—Eliminate the useless expense entailed by the railways in preparing certain reports for the various public bodies; eliminate the useless expense of extra men required by state and federal enactments; permit the railways to earn a sufficient amount of money to eliminate single track where double track is needed and to properly block signal their lines and maintain higher efficiency.—*Vice-President.*

ROAD L (SOUTHWESTERN).—Eternal vigil and constant scrutiny of increased costs in any department of the railway are unquestionably the only ways in which we can get full efficiency.—*President.*

QUESTION 7.—ARE YOUR RELATIONS WITH YOUR EMPLOYEES BECOMING MORE OR LESS SATISFACTORY? WE HAVE IN MIND PARTICULARLY THREE PHASES OF THE SUBJECT: FIRST, CO-OPERATION BY THEM WITH YOU TO PREVENT LEGISLATION THAT WILL IMPAIR THE REVENUES OF THE ROADS; SECOND, INCREASING OR DECREASING EFFICIENCY OF LABOR; THIRD, INCREASING OR DECREASING REASONABLENESS OF EMPLOYEES IN DEMANDS REGARDING WAGES AND CONDITIONS OF EMPLOYMENT.

ERIE RAILROAD.—The relations of the Erie Company with its employees may be said to be at a standstill. There has been no movement towards co-operation of its employees with the company leading to the prevention of legislation tending to impair revenue. The fact is, wages have been increased in the face of hostile legislation; hence, its mischievous effect has not come home to the employee, and it will not until wages are lowered. When their pocket nerve is touched they will be found on the company's side and against the reformers.—*Frederick D. Underwood, President.*

ROCK ISLAND LINES.—I do not see any material change in our relations with our employees. The more intelligent classes are co-operating to prevent unfair legislation. There is a tendency in mechanical trades towards reducing efficiency of labor.—*H. U. Mudge, President.*

DELAWARE & HUDSON.—The relations of this company and its employees are quite satisfactory. They would co-operate to prevent adverse legislation, except in cases where it was "labor" legislation. The efficiency of labor is decreasing. The demands of labor are more reasonable today than two years ago.—*C. S. Sims, Second Vice-President and General Manager.*

KANSAS CITY SOUTHERN.—Our relations with our employees continue to be satisfactory, and we are striving at all times to imbue the spirit that will bring about results mentioned in my answer to my question 6.—*J. A. Edson, President.*

SAN PEDRO, LOS ANGELES & SALT LAKE.—Our relations with our employees continue satisfactory. Organized labor still continues to make demands for higher wages.—*J. Ross Clark, Second Vice-President.*

ROCK ISLAND LINES.—First, as a general proposition, we find our employees apparently anxious to co-operate to prevent legislation that will impair the revenues of the railways. In doing this they have no unselfish motive, but are moved to such a course in the belief that it will assist them in securing increased wages. Second, there has been no increased efficiency on the part of labor of late years except as developed by improved machinery installed at the cost of the employer. Third, the

attitude of the employees with regard to demands for wage increases is not more reasonable than heretofore. Labor is learning by sad experiences that there are proper times for applying for increased rates and changes in working conditions.—*F. O. Melcher, Second Vice-President.*

ILLINOIS CENTRAL.—Labor conditions are not satisfactory. If it were not for the intervention of professional labor agitators, who seem to be creating turmoil for ulterior purposes, there would not be any great difficulty in obtaining the co-operation of employees to prevent adverse legislation impairing the revenues of the roads. There is strong opposition in the rank and file to efficiency methods, such as piece work, increased train tonnage and decreasing of cost units. This is partially due to socialistic tendencies and the exploiting and exaggeration of so-called "efficiency methods" by labor leaders who well know their local unpopularity and use it to accomplish their purposes in other directions. There seems to be no diminution of employees demands in regard to wages and conditions of employment except that they are now controlled temporarily by adverse public sentiment. If the public could be made a party to such increases, through increased rates, such matters would not be in every case decided by public opinion or by arbitration through governmental agencies against the railways.—*W. L. Park, Vice-President and General Manager.*

ROAD B (WESTERN).—Our relations with our employees are very good, and just about the same as for the last few years. Some of them are co-operating to a much greater extent about legislation than ever before. There is, however, not a great deal of co-operation about increasing the efficiency of labor, nor are there any signs of a let-up in regard to demands for increased compensation and easier conditions of employment. There is also a growing tendency for payments of one kind or another, either by law or otherwise, for disabilities caused by accidents or old age, which in the aggregate mean a great burden upon the revenues of the railway companies.—*President.*

ROAD C (EASTERN).—I do not see any change in the relations of the roads and their employees, as long as we have professional mothers-in-law in the form of interested grievance breeders. The managers of these properties are perfectly competent to produce economical methods if they were freed from the politician and labor agitator.—*President.*

ROAD D (SOUTHEASTERN).—Relations with our employees are quite amicable.—*President.*

ROAD E (WESTERN).—While the employees on this particular property are reasonably disposed with respect to all three of the phases mentioned by you, it is not by observation that the relations with employees generally has undergone any remarkable change. Co-operation to prevent legislation is rarely other than by individual employees. The labor organizations are so busy advocating this or that measure in which they are interested, and which is antagonistic to the railways, that they cannot be prevailed upon to appear as an advocate of the companies, and when they do their influence is usually nil. Individual employees, however, very frequently do efficient work in this respect. There has been a very noticeable increase in the efficiency of labor during the last two years, but one would be simply deceiving himself who did not attribute the greater portion of this to the fact that there has been a surplus of labor, and that greater efficiency is always obtained under such circumstances. I have not been able to convince myself that the employees are any more or less reasonable with respect to demanding increases in wages and betterment of working conditions. Candidly, I have never felt that they could be classed among the radicals in this respect. They usually come up for increases when business is good, and in the large organizations in the transportation department there have been about four-year intervals between their demands. I do not believe we need anticipate any demands at the present time, but they will certainly be forthcoming if the business of the country again picks up, and if there is no reduction in the living costs.—*President.*

ROAD F (SOUTHWESTERN).—Our relations with our employees have always been satisfactory. They have co-operated with us in many instances to prevent legislation that would impair earnings, but I cannot say there has been any increase in the efficiency of labor, nor has there been much change in the reasonableness of demands regarding wages and conditions of employment. These matters are mostly regulated by the action of our competitors.—*Vice-President and General Manager.*

ROAD G (CENTRAL).—I cannot see that the relations with employees have improved. I wish I could say they have.—*President.*

ROAD H (WESTERN).—In reply to the first point, on the whole our men co-operate with us, and are interested in preventing adverse legislation that impairs their revenue and ours and curtails development. The increasing or decreasing of efficiency of labor is considerably controlled by laws and regulations by labor unions preventing the increasing of efficiency of labor, and by public support showing an indifferent feeling, but rather encouraging the labor side of the question. Relative to the increasing or decreasing reasonableness of employees in demands regarding wages and conditions of employment. This question is argued from two different angles. I think the men feel that the laws and the public demands are quite unfair and unjust, but this does not prevent many of them from making their own demands, so that the transportation lines are constantly "between the devil and the deep sea." The transportation lines, as they are public servants, as now construed, must have something near the same protection and treatment as other business interests have. You cannot continuously go on curtailing the power and the development of a transportation company without impairing its efficiency and curtailing its investment, as their being such a large factor in the purchase of manufactures and material in the country, it is difficult to understand how you can depress the earnings of the transportation lines and have the public prosper.—*President.*

ROAD I (EASTERN).—I doubt if the relations between the railways as a whole and their employees are becoming much more satisfactory in any of the ways suggested by your question. The problem of bringing about better relations between railway employers and employees so as to get better results, not only for them but also for the public, is one of the most difficult and at the same time one of the most important problems that confronts us.—*President.*

ROAD J (SOUTHEASTERN).—Our relations with our employees are becoming less satisfactory. First, we have no co-operation from them to prevent legislation to impair the revenues of the road; second, we have decidedly decreasing efficiency of labor, with the strength of the union which they depend upon to protect them against indifferent service; third, decided increasing unreasonableness of the employees in demands regarding wages and conditions of employment; their first duty is to the union, and they look to it to protect them against everything, right or wrong; and they usually receive such protection, regardless of the equity.—*Vice-President and General Manager.*

ROAD K (EASTERN).—The relations with the employees are satisfactory. Referring to the three phases of the subject: 1. The employees are not successful in preventing legislation that will impair the revenue of the road. They are more concerned in getting their wages increased. When they approach congressmen, they do not desire to waste their ammunition in helping the railways when it is needed in influencing legislation to increase the force, reduce the hours of labor and secure increased wages by reason of mediation and arbitration through the government body selected for that purpose. 2. They are all concerned in lessening the amount of work to be performed and increasing the wages, so by that process there is a decreased efficiency of labor. 3. The leaders of all labor organizations are vitally interested in retaining their positions, and it is essential that they maintain interest on the part of the rank and file; and the way to do it is to eternally demand more pay and less

work either through a presentation of the subject to the employers or through the medium of legislation. As wages are higher today than ever before, there is not so much agitation on the part of the employees; and, to maintain their prestige, the labor leaders are energetic in developing new ideas and plans the accomplishment of which will decrease the work and increase the wages and thereby keep themselves prominently before the men by whom they are employed.—*Vice-President.*

ROAD L (SOUTHEASTERN).—First. The relations with our employees have always been more or less satisfactory. I have seen no particular demonstration on the part of employees toward co-operation with us to prevent legislation that would impair the revenues of the roads. On the contrary, they have been active in assisting legislation to impair the revenues of the roads. Second. There is certainly no increase in the efficiency of labor. If anything, it is decreasing, due to the influence of labor organizations as a rule. Third. No reasonableness on the part of the employees has been apparent as yet regarding their demands for increases of wages and improvement of conditions of employment.—*President.*

RAILWAY BUILT IN 1911.

The record of new mileage added during the calendar year 1911 in the United States, Canada and Mexico, details of which are given in the following tables, was compiled from official reports from the railways, supplemented by our own records, and from figures furnished by the state railway commissions. This total does not include second, third or fourth track, sidings, or relocated lines. It does not include electric lines, except the New York, Westchester & Boston, which added 12 miles this year. This subsidiary of the New York, New Haven & Hartford, is a four-track line, built to high standards, and will be operated with equipment similar to that in use on the electrified portion of the New Haven's main line.

UNITED STATES.
Table Showing Mileage Built in 1911, Classified by States.

| | No. of Cos. building. | 1911. | No. of Cos. building. | 1910. |
|----------------|--------------------------|----------|--------------------------|----------|
| Alabama | 1 | 25.00 | 5 | 78.96 |
| Alaska | 1 | 47.53 | 2 | 61.00 |
| Arizona | 1 | 11.60 | 3 | 100.82 |
| Arkansas | 3 | 28.00 | 4 | 41.79 |
| California | 10 | 118.38 | 13 | 191.61 |
| Colorado | 4 | 181.79 | 3 | 76.08 |
| Florida | 6 | 115.02 | 6 | 84.38 |
| Georgia | 8 | 122.40 | 6 | 65.07 |
| Idaho | 7 | 163.96 | 10 | 276.71 |
| Illinois | 3 | 4.61 | 3 | 64.89 |
| Indiana | 1 | 30.12 | .. | .. |
| Iowa | 2 | 18.32 | 3 | 46.17 |
| Kansas | 1 | 52.00 | 1 | 15.00 |
| Kentucky | 7 | 125.45 | 4 | 41.00 |
| Louisiana | 5 | 53.00 | 9 | 71.45 |
| Maine | .. | .. | 2 | 32.75 |
| Maryland | 2 | 21.49 | .. | .. |
| Michigan | 3 | 27.45 | 3 | 28.88 |
| Minnesota | 3 | 40.08 | 6 | 244.53 |
| Mississippi | 2 | 19.20 | 3 | 21.65 |
| Missouri | 1 | 11.70 | 4 | 24.20 |
| Montana | 4 | 94.42 | 4 | 115.47 |
| Nebraska | 1 | 30.64 | .. | .. |
| Nevada | 1 | 9.00 | 1 | 12.25 |
| New Jersey | 2 | 28.46 | 1 | 6.90 |
| New Mexico | .. | .. | 1 | 6.00 |
| New York | 2 | 17.22 | 2 | 5.99 |
| North Carolina | 5 | 46.31 | 4 | 105.97 |
| North Dakota | 3 | 209.34 | 3 | 300.96 |
| Ohio | 2 | 5.75 | .. | .. |
| Oklahoma | 3 | 71.00 | 4 | 171.00 |
| Oregon | 7 | 224.21 | 10 | 244.09 |
| Pennsylvania | 9 | 92.99 | 4 | 28.26 |
| South Carolina | 2 | 32.50 | 3 | 19.64 |
| South Dakota | 2 | 21.87 | 4 | 205.58 |
| Tennessee | 2 | 66.00 | 4 | 39.86 |
| Texas | 10 | 413.78 | 28 | 756.35 |
| Utah | 2 | 34.30 | .. | .. |
| Virginia | 3 | 16.66 | 4 | 22.81 |
| Washington | 4 | 99.39 | 9 | 369.50 |
| West Virginia | 4 | 84.46 | 6 | 52.90 |
| Wisconsin | 4 | 209.13 | 6 | 90.63 |
| Wyoming | 3 | 42.40 | 1 | 0.48 |
| Total | 146 | 3,066.93 | 189 | 4,121.58 |
| Canada | 19 | 1,898.59 | 16 | 1,843.80 |
| Mexico | 8 | 351.00 | 3 | 138.27 |

UNITED STATES.

| | Miles. |
|---|--------|
| ALABAMA. | |
| Alabama, Tennessee & Northern—Not specified..... | 25.00 |
| ALASKA. | |
| Copper River & Northwestern—Kuskulano river to Kennecott..... | 47.53 |

| | Miles. |
|---|--------|
| ARIZONA. | |
| Arizona & Eastern—Chandler Junction to Bowen..... | 11.60 |
| ARKANSAS. | |
| Kansas City & Memphis—Cave Springs to Litteral..... | 14.00 |
| Memphis, Dallas & Gulf—Shawmut to Standing..... | 12.00 |
| Thornton & Alexandria—Rock Island Junction to Tinsman..... | 2.00 |
| | 28.00 |
| CALIFORNIA. | |
| California Western Railroad & Navigation Co.—Soda Spring to Willets | 10.00 |
| Kings River (A. T. & S. F. C. L.)—Watoka to Piedra..... | 10.70 |
| Mountain Quarry—Quarries to Flint..... | 7.00 |
| Nevada-California-Oregon—From Surprise to New Pine creek... | 31.44 |
| Northwestern Pacific—Between Willits and Shively..... | 18.00 |
| Pacific Coast—Sisquoc to Palmer..... | 3.80 |
| Porterville Northwestern—Between Porterville and Springville... | 15.90 |
| Sacramento Southern (So. Pac.)—From near Freeport to Walnut grove | 14.29 |
| San Diego & Arizona—Seeley to Dixie..... | 5.00 |
| Sunset Railroad (So. Pac. and A. T. & S. F.)—Fellows to Shale.. | 2.25 |
| | 118.38 |
| COLORADO. | |
| Colorado Railroad (C. & S.)—Wellington to Colorado-Wyoming state line, 19.72 miles; Pueblo to Walsenburg, 46.48 miles; total | 66.20 |
| Denver & Rio Grande—Southern Junction to Walsenburg Junction | 46.50 |
| The Colorado & Southern and the Denver & Rio Grande each built a single-track line between Pueblo and Walsenburg. These lines will be operated jointly by the two companies as a double-track line. | |
| Laramie, Hahn's Peak & Pacific—Between Wyoming-Colorado state line and Coalmont | 44.00 |
| Union Pacific—Dent to Fort Collins..... | 25.09 |
| | 181.79 |
| FLORIDA. | |
| Charlotte Harbor & Northern—Pierce to Mulberry..... | 3.00 |
| Florida East Coast—Knights Key to Key West, 40 miles; Maytown to Chuluota, 20 miles; total..... | 60.00 |
| Jacksonville Terminal—At Jacksonville..... | 2.50 |
| Ocala Northern—Ft. McCoy to Palatka..... | 33.00 |
| Seaboard Air Line—Hernando to Inverness..... | 8.52 |
| Tampa & Jacksonville—Fairfield to Blicketon..... | 8.00 |
| | 115.02 |
| GEORGIA. | |
| Atlantic, Waycross & Northern—Between St. Marys and Atlantic.. | 10.00 |
| Brinson Railway—Millhaven to Waynesboro..... | 18.00 |
| Georgia & Florida—Ellenton to Kingwood..... | 9.80 |
| Gulf Line—Bridgeboro to Camille..... | 20.00 |
| Hawkinsville & Western—Hawkinsville to Grovania..... | 14.00 |
| Ocala Southern—Alapaha to Nashville, 13 miles; Fitzgerald to Abba, 7 miles; total | 20.00 |
| Savannah, Augusta & Northern (Sav. & Statesboro).—Garfield to Stevens Crossing | 13.60 |
| Savannah & Southern—Norden to Willie, 13 miles; Letford to Spurs, 4 miles; total..... | 17.00 |
| | 122.40 |
| IDAHO. | |
| Central Idaho (O. S. L.)—Richfield to Wood river..... | 19.30 |
| Coeur d'Alene & Pend d'Oreille (Spok. Int.)—Coeur d'Alene Junction to Coeur d'Alene, 9.34 miles; Corbin Junction to Bayview, 12.42 miles; total | 21.76 |
| Idaho & Western (C. M. & P. S.)—McGuire to Coeur d'Alene.. | 10.50 |
| Idaho Northern Railway—Emmett to Plaza..... | 5.00 |
| Oregon Short Line—Montpelier to Paris, 8.52 miles; between Burley and Oakley, 21.40 miles; between Rupert and Bliss, 37.85 miles; Caldwell to Wilder, 11.32 miles; Ashton to Judkins, 21 miles; total | 100.09 |
| Pacific & Idaho Northern—Between Lamoth and New Meadows.... | 7.10 |
| Salt Lake & Idaho (O. S. L.)—At Burley..... | 0.21 |
| | 163.96 |
| ILLINOIS. | |
| Calumet, Hammond & Southern—Not specified..... | 0.32 |
| Cleveland, Cincinnati, Chicago & St. Louis—From 1.93 miles south of Mt. Carmel to Wabash river..... | 2.38 |
| Illinois Southern—Moro to Kellogg..... | 1.91 |
| | 4.61 |
| INDIANA. | |
| Cleveland, Cincinnati, Chicago & St. Louis—Wabash river to Evansville | 30.12 |
| IOWA. | |
| Charles City Western—At Marble Rock, 0.28 miles; at Charles City, 3.04 miles; total | 3.32 |
| Chicago, Anamosa & Northern—Between Coggon and Quasqueton.. | 15.00 |
| | 18.32 |
| KANSAS. | |
| Scott City Northern (A. T. & S. F.)—Scott City to Winona..... | 52.00 |
| KENTUCKY. | |
| Chicago, Memphis & Gulf—Tennessee-Kentucky state line to Hickman | 10.50 |
| Kentucky Highlands (L. & N.)—Millville to Versailles..... | 7.92 |
| Louisville & Nashville—Straight creek branch, Straight creek to Nield, 4.61 miles; Henderson divisions, Mortons to Arklon, 8.17 miles; total | 12.78 |
| Nashville, Chattanooga & St. Louis—Hickman to East Hickman... | 1.25 |
| Ohio & Kentucky—Cannel City to North Licking river..... | 13.00 |
| Sandy Valley & Elkhorn—Shelby Junction to Consolidated Coal Co. in Letcher county | 40.00 |
| Wasioto & Black Mountain (L. & N.)—Orby to Benham; Baxter to Harlan; Tijay to Balkin; between Ponza and Amru; total.. | 40.00 |
| | 125.45 |

| LOUISIANA. | | Miles. | PENNSYLVANIA. | | Miles. |
|--|--|--------|--|--|--------|
| Athens & Southeastern—Providence to Fords Spur..... | | 7.30 | Baltimore & Ohio—Between Acosta and Somerset..... | | 9.50 |
| New Orleans, Texas & Mexico (St. L. & S. F.)—Knapp to Mix... | | 7.00 | Beech Creek (N. Y. C. & H. R.)—Boardman to Carnwath..... | | 2.76 |
| North Louisiana & Gulf—Hodge to Bienville..... | | 25.70 | Chestnut Ride—To C. R. R. of N. J. at Palmerton..... | | 2.00 |
| Ouachita & Northwestern—Newport to T. & G. Junction..... | | 10.00 | Connellsville & State Line (W. Md.)—Maryland-Pennsylvania state line to Connellsville..... | | 68.49 |
| Southern Railway & Navigation Co.—Not specified..... | | 3.00 | Delaware, Lackawanna & Western—Pennsylvania-New Jersey state line to Stateford Junction..... | | 1.09 |
| | | 53.00 | Hickory Valley—Pine Camp to Summit..... | | 1.34 |
| | | | Ironton Railroad—Not specified..... | | 0.30 |
| | | | Pennsylvania Railroad—New Florence to terminus, 4.30 miles; west of Export, 0.64 miles; north of Coal Run Junction, 1.51 miles; extension of Radebaugh branch, 0.06 miles; total..... | | 6.51 |
| | | | Pittsburgh & Susquehanna—Philipsburg to East Moshannonton.... | | 1.00 |
| | | | | | 92.99 |
| | | | SOUTH CAROLINA. | | |
| | | | Bennettsville & Cheraw—Brownsville to Sellers..... | | 10.50 |
| | | | South Carolina Western—Hartsville to Florence..... | | 22.00 |
| | | | | | 32.50 |
| | | | SOUTH DAKOTA. | | |
| | | | Chicago & North Western—Colome to Winner..... | | 10.97 |
| | | | Chicago, Burlington & Quincy—East of Este..... | | 10.90 |
| | | | | | 21.87 |
| | | | TENNESSEE. | | |
| | | | Birmingham & North Western—Jackson to Dyersburg..... | | 48.00 |
| | | | Middle Tennessee—Leatherwood Junction to Mt. Pleasant..... | | 18.00 |
| | | | | | 66.00 |
| | | | TEXAS. | | |
| | | | Angelina & Neches River—Naclina to Chireno..... | | 10.70 |
| | | | Atchison, Topeka & Santa Fe—Sweetwater to Augustus..... | | 60.00 |
| | | | Crystal City & Uvalde—Gardendale to Fowlerton..... | | 27.00 |
| | | | Fort Worth & Rio Grande (St. L. & S. F.)—Brownwood north to May..... | | 18.00 |
| | | | Gulf, Colorado & Santa Fe (A. T. & S. F.)—Between Lometa and Eden..... | | 72.19 |
| | | | Houston Belt & Terminal—Around Houston..... | | 9.74 |
| | | | Jefferson & Northwestern—Towards Naples, 1 mile; Lanies to Linden, 5 miles; total..... | | 6.00 |
| | | | Kansas City, Mexico & Orient—Tankersley to Granada..... | | 117.00 |
| | | | Port Bolivar Iron Ore—Longview to Ore City..... | | 30.00 |
| | | | Stephenville, North & South Texas (St. L. S. W.)—Gatesville Junction to Hamilton, 31.90 miles; Edson to Comanche, 31.25 miles; total..... | | 63.15 |
| | | | | | 413.78 |
| | | | UTAH. | | |
| | | | Bingham & Garfield—Between Bingham and Garfield..... | | 21.00 |
| | | | Uintah Railway—Dragon Junction to Watson, 9.4 miles; Rainbow Junction to Rainbow, 3.9 miles; total..... | | 13.30 |
| | | | | | 34.30 |
| | | | VIRGINIA. | | |
| | | | Big Sandy & Cumberland—Matney to Rife..... | | 2.00 |
| | | | Interstate Railroad—Pardee to Roaring Fork mine, 2.88 miles; Argo Junction to Argo Saw Mill, 1.00 mile; total..... | | 3.88 |
| | | | Norfolk & Western—Petersburg Belt, Poe to Addison, 10.56 miles; Big Creek branch, above Richlands, 0.22 miles; total..... | | 10.78 |
| | | | | | 16.66 |
| | | | WASHINGTON. | | |
| | | | Chicago, Milwaukee & Puget Sound—Moncton to Everett..... | | 55.00 |
| | | | Chehalis & Cowlitz River—Chehalis southeast to Newaukum prairie..... | | 7.25 |
| | | | Northern Pacific—Ocosta to Bay City..... | | 2.73 |
| | | | Oregon-Washington Railroad & Navigation Co.—Argo to Seattle, 3.26 miles; South Aberdeen to Hoquiam, 3.93 miles; North River Junction to Primo, 12.02 miles; North Yakima to Atalia, 15.20 miles; total..... | | 34.41 |
| | | | | | 99.39 |
| | | | WEST VIRGINIA. | | |
| | | | Coal & Coke—Roaring Creek Junction to Elkins..... | | 6.90 |
| | | | Chesapeake & Ohio—Raleigh & Southwestern, 14.60 miles; Coal river branch, 11.20 miles; Guyandotte Valley branch, 12.40 miles; Buffalo Creek branch, 11.50 miles; not specified, 2.55 miles; total..... | | 52.25 |
| | | | Elk & Little Kanawha—Between Boggs and Rosedale..... | | 22.00 |
| | | | Norfolk & Western—Sycamore branch from a point 2.8 miles east of Williamson, 2.69 miles; Wayne branch from East Lynn, 0.62 miles; total..... | | 3.31 |
| | | | | | 84.46 |
| | | | WISCONSIN. | | |
| | | | Chicago & North Western—On S. M. & N. W. from a point 2.7 miles north of Lindworm to Necedah, 130.55 miles; between Wyeville and Sparta, 23.02 miles; West Allis to Butler, 8.14 miles; total..... | | 161.71 |
| | | | Minneapolis, St. Paul & Sault Ste. Marie—Between Frederic and Superior..... | | 33.42 |
| | | | Superior & Southeastern—Wisconsin to Taylor Lake, 5 miles; Taylor Lake to Namekagon Lake, 3 miles; total..... | | 8.00 |
| | | | Wisconsin-Northwestern—Logging branches..... | | 6.00 |
| | | | | | 209.13 |
| | | | WYOMING. | | |
| | | | Chicago, Burlington & Quincy—Thermopolis south..... | | 18.00 |
| | | | Colorado Railroad (C. & S.)—Colorado-Wyoming state line to Cheyenne..... | | 12.40 |
| | | | Laramie, Hahn's Peak & Pacific—Between Foxpark and Wyoming-Colorado state line..... | | 12.00 |
| | | | | | 42.40 |
| | | | CANADA. | | |
| | | | Algoma Central & Hudson Bay—In District of Algoma, Ont., between Mile 94 and Mile 82, 12.00 miles; between Mile 150 and Mile 120, 30 miles; between Hawk Lake Junction and Hobon, 23.84 miles; Magpie branch, 3.50 miles; total..... | | 69.34 |

| | |
|--|-----------------|
| Atlantic, Quebec & Western—Between Grand River and Gaspe..... | Miles. 48.00 |
| Canada & Gulf Terminal—St. Flavie, Que., to Matane..... | 36.00 |
| Canadian Northern—In Manitoba, 26 miles; in Saskatchewan, 256 miles; in Alberta, 154 miles; in British Columbia, 20 miles; total..... | 456.00 |
| Canadian Northern Ontario—In Province of Ontario—Not specified..... | 47.00 |
| Canadian Pacific—Ontario, Georgian Bay & Seaboard, Coldwater Junction to Bethany Junction, 76.37 miles; South Ontario & Pacific, Guelph Junction south, 5.00 miles; Saskatchewan-Moose Jaw south, 35 miles; Swift Current southeast, 45 miles; Swift Current northwest, 35 miles; Wilkie northwest, 32 miles; Imperial-Valeport, 59 miles; Bulyea south, 7 miles; Weyburn west, 23.80 miles; Moose Jaw northwest, 53 miles; Alberta-Lethbridge-Alderoyde, 56.80 miles; Castor Coronation, 21 miles; Irricana easterly, 17.50 miles; British Columbia-Jukeson-Fort Steele, 9.20 miles; Galloway-Waldo, 11 miles; total..... | 486.67 |
| Esquimalt & Nanaimo (Can. Pac.)—Cameron Lake, B. C., to Port Alberino..... | 27.00 |
| Grand Trunk—Birch, Ont., to Tay..... | 8.90 |
| Grand Trunk Pacific—In Saskatchewan, 102 miles; in Alberta, 144 miles; in British Columbia, 25 miles; total..... | 271.00 |
| Ha Ha Bay—In Province of Quebec..... | 10.00 |
| Intercolonial—Chatham division, 8.00 miles; Elmira division, 6.00 miles; total..... | 14.00 |
| Kettle Valley Lines—Midland, B. C., to Carmi, 45 miles; Merritt to Otter Summit, 30 miles; total..... | 75.00 |
| National Transcontinental Ry. (Grand Trunk Pacific)—New Brunswick—Between Moncton and Quebec and Ontario boundary, 0.73 miles; Quebec—Between New Brunswick-Quebec boundary and Quebec-Ontario boundary, 155.31 miles; Ontario—Between Quebec-Ontario boundary and Ontario-Manitoba boundary, 124.21 miles; total..... | 280.25 |
| Quebec & Saguenay—Province of Quebec..... | 7.00 |
| Quebec Central—St. Justine to St. Sabine..... | 1.44 |
| Quebec Railway, Light & Power Co.—Beaport, Que., to Kent House Park..... | 3.25 |
| Vancouver, Victoria & Eastern (Gr. Nor.)—Princeton, B. C., to Coalmont, 12 miles; Abbotsford to Kilgord, 6 miles; total..... | 18.00 |
| Sydney & Louisburg—Morieen, N. S., to Birch Grove Colliery..... | 2.50 |
| Temiskaming & Northern Ontario—Iroquois Falls, Ont., to Timmins, 33.71 miles; North Bay Junction to Nipissing Junction, 3.53 miles; total..... | 37.24 |
| | 1,898.59 |

MEXICO.

| | |
|---|--------|
| Interoceanic (N. Ry. of M.)—Metepic, Pueblo to San Lorenzo.... | 26.00 |
| Mexican Southern (N. Ry. of M.)—Oaxaca, Oaxaca to Tlacolula.. | 21.00 |
| Mexican Union—La Pay, Sonoro to Santa Rosalia..... | 16.00 |
| Mexico North Western—Terrazas to Madera, 116.00 miles; San Antonio to Cusihiuriachic, 15.00 miles; total..... | 131.00 |
| National Railways of Mexico—Penjamo-Ajuno line, Penjamo, Guanajuato to kilometer 40, 25.00 miles; Durango-Llano Grande line, Durango, Durango to Rio Chico, 36.00 miles; Durango-Canitas line, Durango to kilometer 28, 16.00 miles; total..... | 77.00 |
| San Diego & Arizona—Edwards, Lower California to Valle Redondo..... | 7.00 |
| Southern Pacific of Mexico—Between Santiago river and Tepic.... | 36.00 |
| Vera Cruz & Isthmus (N. Ry. of M.)—Sierra Colorado, Vera Cruz to Cosomolapan, 20.00 miles; San Juan river to San Andres river, 17.00 miles; total..... | 37.00 |
| | 351.00 |

| | |
|------------------------------------|---------------------|
| Total weight of locomotive..... | 269,000 lbs. |
| Type of boiler..... | Conical connection. |
| Outside diameter at front end..... | 76 3/4 in. |
| Largest diameter..... | 87 in. |
| Firebox, length..... | 114 in. |
| Firebox, width..... | 75 1/4 in. |
| Tubes, number..... | 207 |
| Flues, number..... | 36 |
| Tubes, diameter..... | 2 1/4 in. |
| Flues, diameter..... | 5 1/2 in. |
| Tubes, length..... | 22 ft. |
| Heating surface, total..... | 4,048 sq. ft. |
| Superheating surface..... | 897 sq. ft. |
| Grate area..... | 59.75 sq. ft. |

EXPERIMENTAL PACIFIC TYPE LOCOMOTIVE.

A Pacific type locomotive which has developed 2,216 h. p.—1 h. p. to each 121.4 lbs. total weight—continuously in actual service, has been designed and built by the American Locomotive Company at its own expense for the purpose of securing information as to the maximum possibilities in economy and capacity per unit of weight with a locomotive of standard wheel arrangement. Compared with one of equal weight and conventional design this locomotive has shown an economy in fuel exceeding 25 per cent. Thoroughly appreciating the need of greater sustained capacity to meet the maximum requirements of modern passenger service, the builders embodied in this design the latest knowledge of general proportion, the most recent development in materials and improvements in the design of details, combined with the best use of approved fuel-saving devices to secure the utmost possible economy of the locomotive as a whole from the operating standpoint. The improvements over long accepted conventional practice in the design and construction of many of the principal details introduced in this locomotive have since been adopted as standard practice by the builders and widely applied to a large number of other locomotives with marked success. For these reasons, this locomotive (No. 50,000, as it is called by the builders) marks as distinct and definite an advance in locomotive engineering as did the Mountain type of the Chesapeake & Ohio built by the same company.

To accomplish the purpose of the design—the maximum capacity per pound of weight—the largest boiler capacity within the pre-determined wheel loads was the essential feature. This end was obtained by eliminating every pound of weight in all the parts that was not necessary to strength or durability, and by utilizing the weight thus saved to provide a larger boiler, and by increasing the capacity of the boiler thus secured by combining in one design all the most approved fuel-saving devices. The design and construction of the boiler are shown in the accompanying illustrations.

The accompanying comparison of locomotive No. 50,000 with other leading examples of Pacific type locomotives of approxi-

| 50,000 | A. | B. | C. | D. |
|---------------------|---------------------|---------------------|---------------|---------------------|
| 269,000 lbs. | 269,000 lbs. | 271,000 lbs. | 270,000 lbs. | 266,500 lbs. |
| Conical connection. | Conical connection. | Conical connection. | Straight | Conical connection. |
| 76 3/4 in. | 72 in. | 72 in. | 79 3/4 in. | 72 in. |
| 87 in. | 83 in. | 83 in. | 83 1/4 in. | 83 in. |
| 114 in. | 108 1/4 in. | 108 1/4 in. | 111 in. | 108 1/4 in. |
| 75 1/4 in. | 75 1/4 in. | 75 1/4 in. | 80 1/4 in. | 75 1/4 in. |
| 207 | 175 | 242 | 343 | 382 |
| 36 | 32 | 28 | ... | ... |
| 2 1/4 in. | 2 1/4 in. | 2 in. | 2 1/4 in. | 2 in. |
| 5 1/2 in. | 5 1/2 in. | 5 3/4 in. | ... | ... |
| 22 ft. | 21 ft. 6 in. | 21 ft. 6 in. | 21 ft. | 20 ft. |
| 4,048 sq. ft. | 3,424 sq. ft. | 3,784 sq. ft. | 4,427 sq. ft. | 4,210 sq. ft. |
| 897 sq. ft. | 765 sq. ft. | 705 sq. ft. | ... | ... |
| 59.75 sq. ft. | 56.5 sq. ft. | 56.5 sq. ft. | 61.8 sq. ft. | 56.5 sq. ft. |

FOREIGN RAILWAY NOTES.

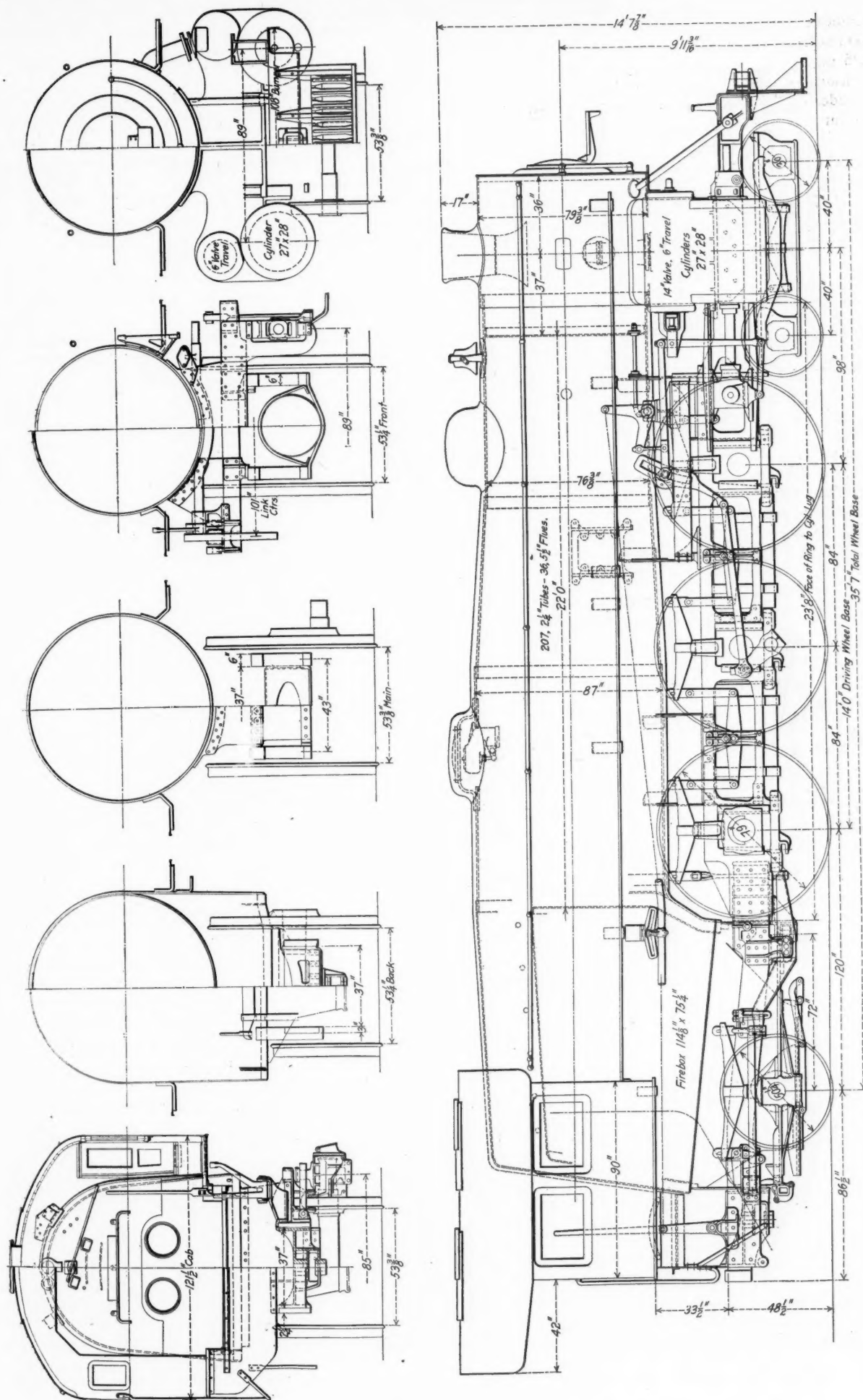
The Russian ministry of finance has permitted the transportation of foreign goods over the western frontier for direct connection with the Trans-Baikal Railway. The inspection of such goods will be made by the custom house authorities at Irkutsk, Siberia. The success of direct transportation of goods between Warsaw and Siberia, which has reduced the time in covering the 3,000 miles from 24 days to eight days, has induced the board of the Vistula Railroad to introduce more rapid railway communication between Moscow and Odessa.

The proposed Kharkoff-Cherson Railway, Russia, will measure about 290 miles, beginning at Merepha and ending, after passing through considerable industrial areas and crossing the Dniepre river, at Cherson, where it will join the Cherson-Nikolaieff line. The value of the line is that it will bring central Russia with its markets into immediate communication with Cherson. The cost is estimated at \$26,940,000, which it is proposed to raise by an issue of shares and government guaranteed bonds.

mately equal weight shows strikingly the larger boiler provided in proportion to its total weight.

It will be seen that the boiler of locomotive No. 50,000 has 624 and 264 more square feet of evaporative heating surface, combined with 132 and 192 more square feet of superheating surface, than the other two superheater locomotives respectively, both of which are of equal or greater weight. Compared with the two locomotives not equipped with superheaters, locomotive 50,000 has at the most only 379 sq. ft. of evaporating heating surface less, which is undoubtedly 3 or 4 times offset by the economy secured with the 897 sq. ft. of superheating surface. This is the largest amount of superheating surface ever provided in an American passenger locomotive, and results in realizing greater economy in operation from this feature, due to the greater degree of superheat attained.

Compared with another locomotive of equal weight, also equipped with a superheater, but of less superheating surface and giving an average of 63 deg. less superheat, the locomotive here illustrated showed in service tests an average of 13 per cent. greater economy in fuel and 14 per cent. in water consumption

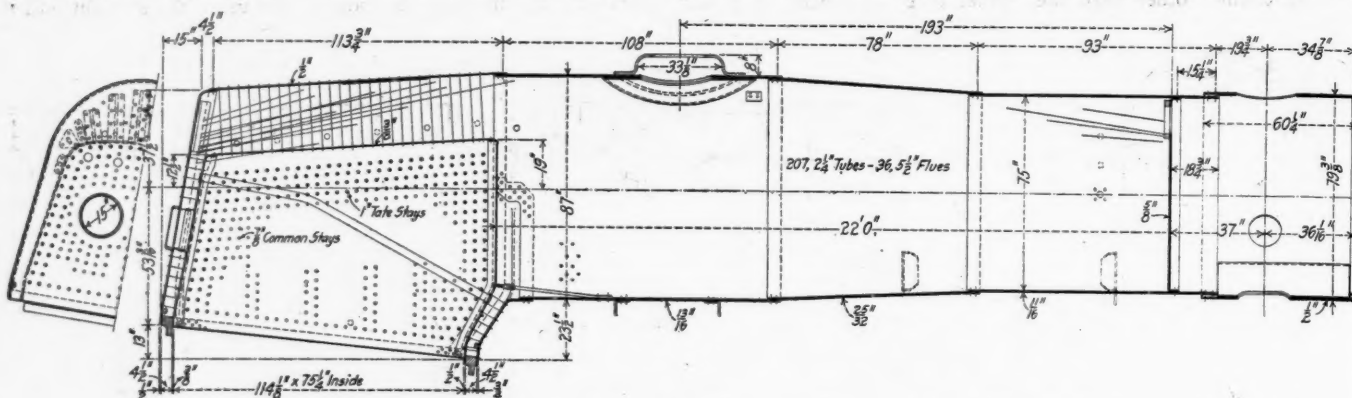


Experimental Pacific Type Locomotive, No. 50,000, Built by the American Locomotive Company.

per indicated horse power per hour. In these tests, locomotive 50,000 reached a maximum superheat of 341 deg., with an average of 276 deg., which is believed to be the highest record for any American locomotive. The superheater is of the type "A" with top header and 36 double looped superheater units.

To further increase the boiler capacity through improved

cylinders of this construction in American locomotive practice, and constitutes probably the most radical of the departures from conventional practice in this design. This construction was adopted in order to save weight. As a result, the 27 in. x 28 in. cylinders with which the locomotive is equipped weigh 2,660 lbs. less than 22 in. x 28 in. cast iron cylinders of ordinary con-

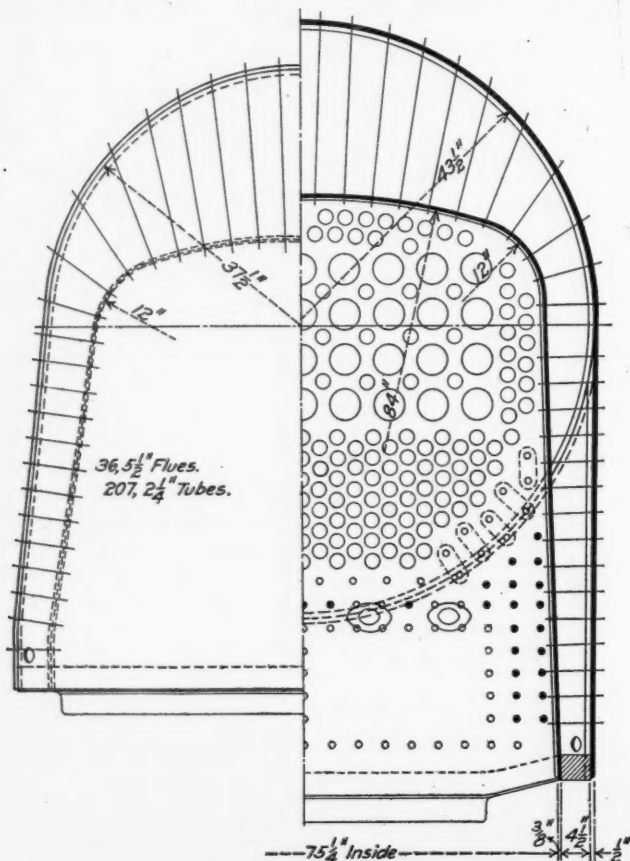


Longitudinal Section Through Boiler of Experimental Pacific Type Locomotive.

boiler economy, the firebox is equipped with a Security sectional brick arch. Aside from this large boiler capacity, the number of new features introduced in this design with a view both of saving weight and securing improved economy in operation make this locomotive one of the most interesting of recent construction. Among these, the following deserve particular notice: Cast

struction. Cast iron cylinders of this size arranged for inside steam pipes would have weighed approximately 4,000 lbs. more.

Outside Steam Pipes.—This arrangement was really necessitated because of the application of cast steel cylinders, as it is the only practical method of construction with cylinders of that material because of the resulting simplification of the castings.



Half-Sections and End Elevations of Boiler for Experimental Pacific Type Locomotive.

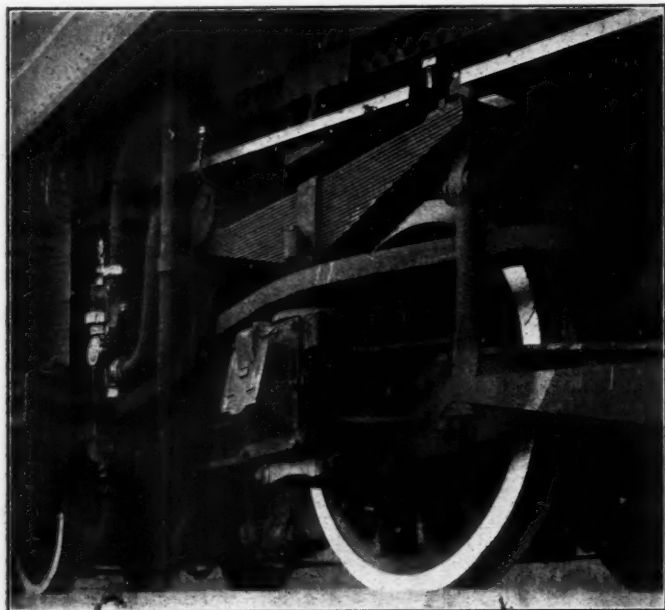
steel cylinders with cast iron bushings; steam pipes arranged to connect with the cylinders outside of the smokebox; screw reverse gear; a self-centering guide for the valve stem; a new arrangement of guide for the extended piston-rod end, likewise self-centering; and an improved outside bearing radial trailing truck.

Cast Steel Cylinders.—This is the first instance of the use of

Because of its many advantages the outside steam pipe construction first introduced into the country on the locomotive here illustrated, has been very favorably received by American railway men. It greatly improves the steaming capacity of the boiler, because it removes much of the obstruction to draft in the smokebox, which is present with the steam pipes of conventional design. It is also probable that the elimination of the live steam passages in the cylinder saddle will tend to minimize the loss of cylinders from cracking in service.

Screw Reverse Gear.—By the use of the screw reverse gear, instead of the ordinary lever, locomotive 50,000 introduces what promises to be a most important and beneficial change in American locomotive practice, both from the standpoint of economy in operation and the ease and comfort of the engineer. (The view showing the side elevation of the locomotive is incorrect, in that it shows an ordinary type of reverse lever.) In the large locomotives of the day it is becoming more difficult every year to handle the reverse lever easily. As a result, considerable loss in

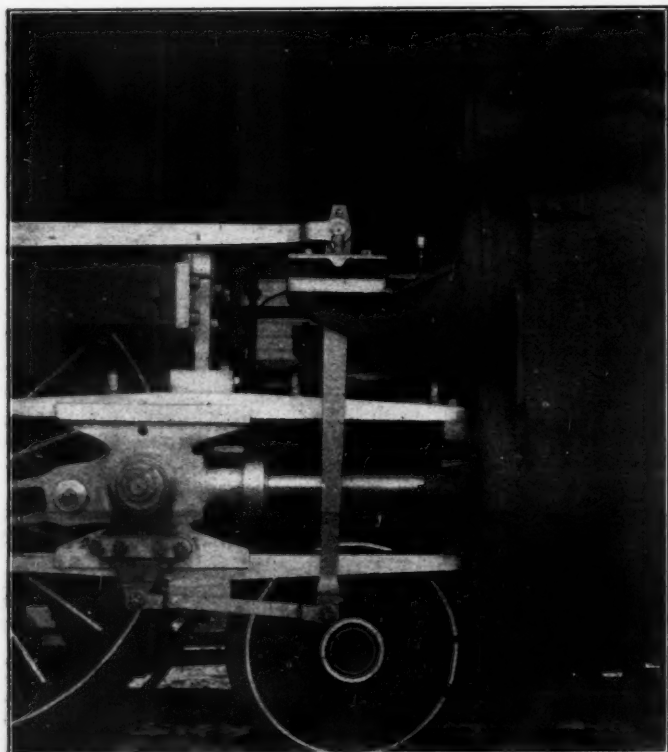
construction employed with the Walschaert valve gear when it is necessary to take down the valve motion. This arrangement is self-supporting, so that no bracing from the guides or any other source than the cylinder is required. It permits the use of a straight design of combination lever without forks,



Improved Outside Bearing Trailer Truck.

which is connected to the valve stem crosshead by a pin passing through its wings, thus affording greater lateral stability than is obtained in other designs.

Extended Piston Rod Guide.—The builder's new standard design of guide for the extended piston rod, which, in view of the



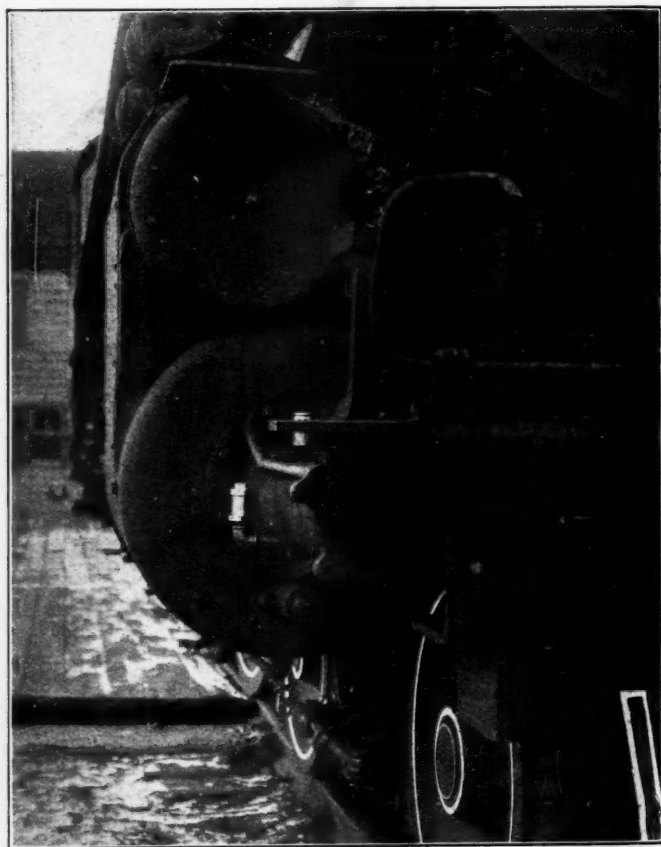
Self-Centering Valve Stem Guide.

general adoption of this practice on locomotives equipped with superheaters, has a wide application, is used on this locomotive. This device, like the valve stem guide, is self-centering and can be removed and replaced without lining up, and at the same time exactly coincides with the longitudinal axis of the cylinder.

Trailer Truck.—A saving in weight of from 2,500 to 3,000 lbs. was effected by the application of an improved design of outside bearing radial truck in place of the former type which entailed the use of outside supplementary frames secured to the slab rear portion of the main frames by heavy and strong cast steel filling pieces.

This type of truck had been successfully applied before and has since become the builder's standard design for Pacific and Mikado type locomotives. It provides for a universal adjustment of the springs to the rise and fall of the engine and a resistance to transverse motion through the combined action of the spring-centering device and the inclined friction plates which operate to restore the truck to its normal central position on entering a tangent after passing over a curve. As a result, experience proves that it greatly improves the riding qualities of the locomotive.

Bumper and Pilot.—Further evidence of the refinement in de-



Self-Centering Extended Piston Rod Guide and Steel Bumper Beam.

tail carried out in this locomotive to keep the weight of every part down to a minimum consistent with strength is furnished by the use of a pressed steel bumper and pilot, a construction which has been very successfully employed on the Lake Shore & Michigan Southern. Compared with an ordinary design of cast steel bumper the pressed steel type here employed weighs approximately 1,200 lbs. less, while as between the pressed steel and wooden pilot there is a difference of 350 lbs., a total saving of some 1,500 lbs. being effected in these two details alone.

Vanadium Steel.—Additional strength without increased weight is secured by the liberal use throughout the design of vanadium steel for many of the principal parts. Some of the parts constructed of this steel are: driving wheel centers, frames, rods, piston rods, valve motion work, springs and crankpins. Vanadium was also used in the cast steel cylinders and in the cast iron cylinder and valve chest bushings.

Locomotive 50,000 sets a new high mark for the capacity and economy attainable within the limitations of conservative wheel

loads in a modern passenger locomotive designed for sustained high speed service with heavy loads. It has also pointed a way by which present commonly accepted practice may be greatly improved by better proportion of boiler to engine capacity, greater refinement in the design of details and modifications of present standards, the best use of fuel-saving devices, the value of which has been tried and proved in service and the latest developments in material.

There is not another instance in the history of American locomotive development in which locomotive builders on their own initiative and at their own expense have constructed a locomotive—not to introduce a new principle; but to secure information as to the maximum possibilities in economy and capacity inherent in already adopted principles with the view of the advancement of locomotive design. For these reasons, this locomotive merits investigation and the most careful study of all the details of its



Screw Reverse Gear on Locomotive 50,000.

design on the part of all railway officials interested in locomotive operation. Its performance on the Erie Railroad on which it is running, and of which a full account will be given in a later issue, should be closely watched. The general dimensions, weights and ratios are given in the following table:

General Data.

| | |
|--|---------------|
| Gage | 4 ft. 8½ in. |
| Service | Passenger |
| Fuel | Bit. coal |
| Tractive effort | 40,300 lbs. |
| Weight in working order | 269,000 lbs. |
| Weight on drivers | 172,500 lbs. |
| Weight of engine and tender in working order | 430,500 lbs. |
| Wheel base, driving | 14 ft. |
| Wheel base, total | 35 ft. 7 in. |
| Wheel base, engine and tender | 68 ft. 2½ in. |

Ratios.

| | |
|--|--------|
| Weight on drivers ÷ tractive effort | 4.26 |
| Total weight ÷ tractive effort | 6.68 |
| Tractive effort × diam. drivers ÷ heating surface* | 596.00 |
| Total heating surface* ÷ grate area | 90.50 |
| Firebox heating surface ÷ total heating surface,* per cent. | 4.60 |
| Weight on drivers ÷ total heating surface* | 32.00 |
| Total weight ÷ total heating surface* | 49.60 |
| Volume both cylinders, cu. ft. | 18.60 |
| Total heating surface ÷ vol. cylinders | 290.00 |
| Grate area ÷ vol. cylinders | 3.20 |

Cylinders.

| | |
|---------------------------|-----------------|
| Kind | Simple |
| Diameter and stroke | 27 in. x 28 in. |

Valves.

| | |
|-------------------------|---------------------------------|
| Kind | Piston |
| Diameter | 16 in. |
| Greatest travel | 6½ in. |
| Outside lap | 1¼ in. |
| Inside clearance | ¼ in. |
| Lead in full gear | Forward, ¼ in.; Backward, ¼ in. |

Wheels.

| | |
|---|------------------|
| Driving, diameter over tires | 79 in. |
| Driving, thickness of tires | 3½ in. |
| Driving journals, main, diameter and length | 11 in. x 12 in. |
| Driving journals, others, diameter and length | 10½ in. x 12 in. |
| Engine truck wheels, diameter | 36 in. |
| Engine truck, journals | 6½ in. x 12 in. |
| Trailing truck wheels, diameter | 50½ in. |
| Trailing truck, journals | 8 in. x 14 in. |

Boiler.

| | |
|--|--------------------|
| Style | Conical |
| Working pressure | 185 lbs. |
| Outside diameter of first ring | 76¼ in. |
| Firebox, length and width | 114½ in. x 75¼ in. |
| Firebox plates, thickness | ¾ in. x ½ in. |
| Firebox, water space | 4½ in. |
| Tubes, number and outside diameter | 207—2¼ in. |
| Tubes, superheater | 36—5½ in. |
| Tubes, length | 22 ft. |
| Heating surface, tubes | 3,800 sq. ft. |
| Heating surface, firebox | 248 sq. ft. |
| Heating surface, total | 4,048 sq. ft. |
| Superheater heating surface | 897 sq. ft. |
| Grate area | 59.75 sq. ft. |
| Smokestack, diameter | 18 in. |
| Smokestack, height above rail | 14 ft. 7½ in. |
| Center of boiler above rail | 9 ft. 11 5/16 in. |

Tender.

| | |
|-------------------------------------|-----------------|
| Tank | Water bottom |
| Frame | 13 in. channels |
| Wheels, diameter | 36 in. |
| Journals, diameter and length | 5½ in. x 10 in. |
| Water capacity | 8,000 gals. |
| Coal capacity | 14 tons |

*Equivalent heating surface equals 5,394 sq. ft.

It now seems probable that in a very few years there will be a transcontinental line entirely across Africa from the Indian ocean to the mouth of the Congo river, though it is unlikely that there will be any appreciable through traffic over it, at least for a long time to come. This line will be made up of the Congo river and the railways around its rapids and the line planned from the upper waters to Lake Tanganyika, and of the German-African Midland Railway, which, if a bill now before the Imperial Diet becomes a law, will be extended westward to Lake Tanganyika by 1915. The extension of this latter line heretofore authorized will be completed to Tabora next February, in advance of the time prescribed. Thence to the lake a route has been examined, and it is found that the most favorable lake terminus is Kigoma, three miles north of the better known Ujiji, and 256 miles nearly due west from Tabora. In connection with this extension three steamers are to be provided for the navigation of this lake, which is more than 400 miles long from north to south, but generally less than 40 miles wide. This will give the German railway something like the position of the British Uganda Railway, whose ocean terminus is 200 miles further north. One of the reasons given for haste in reaching Lake Tanganyika is to anticipate the new lines of the Congo Free State. It will be interesting to watch the competition of two such lines for the traffic of the country on a lake in the heart of Africa, which for many years must be inconsiderable. From and to Europe the German route has the drawback of the Suez Canal and a much longer rail line; while the Congo route involves long river navigation and two or three transfers from rail to river. In an air line the distance from the lake to the mouth of the Congo is about 75 per cent. longer than from the lake to Dar-es-Salaam, the ocean terminus of the German line; but the actual route down the Congo is more than three times the length of the German railway. The cost of the extension from Tabora to the lake is estimated at about \$10,000,000, with nearly \$1,100,000 more for steamers and docks on the lake. It is noticeable that the part of the road first built already requires rebuilding, having been made too light even for the light traffic it now has.

CARS AND LOCOMOTIVES ORDERED IN 1911.

In the following tables are presented, in accordance with the annual custom of the *Railway Age Gazette*, a detailed statement of the new freight cars, passenger cars and locomotives ordered by North American railways in the year 1911. Although the compilation of figures from such numerous sources is necessarily subject to some slight omissions, the results are sufficiently accurate to meet the general purpose for which these statistics have been prepared, viz., to show the extent of equipment purchases by the railways of the United States, Canada and Mexico as compared with previous years.

Practically all of the data is derived from official sources, but in a few instances where no replies have been made to our inquiries figures taken from our regular weekly records have been used. The following statements refer to cars and locomotives ordered during 1911; statistics of equipment built are given elsewhere in this issue. The falling off in orders both for new cars and for new locomotives is marked, both as compared with last year and with several preceding years, although the figures are in each instance approximately twice as large as those for 1908. However, there has been a material and encouraging increase in orders placed during the closing weeks of the year and the new

business on the books of the manufacturers is far better than at this time last year.

The tables show that during the year there were ordered 133,117 freight cars, 2,623 passenger cars, and 2,850 locomotives. Of the freight cars, 28,418 are all wood; 54,605 have steel underframes, and 50,094 are all steel. Of the passenger cars 1,010 are all wood, 619 have steel underframes and 909 are all steel. Of the locomotives, 2,625 are simple and 225 are compound; of the latter, 109 are Mallet. Of the freight cars 42,465 are equipped with friction draft gear, and of the passenger cars 1,061 are electric lighted. Of the locomotives, 908 are equipped with superheaters, 48 with feedwater heaters, and 37 with reheaters; 133 are electric locomotives.

The figures of orders for cars and locomotives during the past eleven years, as compiled by this paper, are as follows:

| Cars | | | Cars | | |
|----------|--------------|------------|----------|--------------|------------|
| Year. | Locomotives. | Passenger. | Year. | Locomotives. | Passenger. |
| 1901.... | 4,340 | 2,879 | 1907.... | 3,482 | 1,791 |
| 1902.... | 4,665 | 3,459 | 1908.... | 1,182 | 1,319 |
| 1903.... | 3,283 | 2,310 | 1909.... | 3,350 | 4,514 |
| 1904.... | 2,538 | 2,213 | 1910.... | 3,787 | 3,881 |
| 1905.... | 6,265 | 3,289 | 1911.... | 2,850 | 2,623 |
| 1906.... | 5,642 | 3,402 | | | |

FREIGHT CARS ORDERED IN 1911.

| Purchaser. | No. | Kind. | Capacity. | Builder. |
|---------------------------------|--------|-------------|-----------|--------------------------|
| Acadia Coal Co. | e50 | Hopper... | 60,000 | Can. Car & Fdy. |
| Ak. Cant. & Y. | *50 | Gondola .. | 100,000 | Am. Car. & Fdy. |
| | †35 | Box | 80,000 | Am. Car. & Fdy. |
| | †15 | Flat | 100,000 | Am. Car. & Fdy. |
| Algoma C. & Hudson... | †180 | Flat | 80,000 | Can. Car. & Fdy. |
| | †50 | Ore | 100,000 | Hart-Otis. |
| | †75 | Ore | 100,000 | Hart-Otis. |
| | †30 | Box | 80,000 | Can. Car. & Fdy. |
| | e6 | Caboose... | 80,000 | Company shops. |
| Algoma Steel Co. | †25 | Ballast... | 80,000 | Hart-Otis. |
| | *15 | Flat | 80,000 | Canadian. |
| | *10 | Coke | 60,000 | Canadian Car & Fdy. |
| Allis Chalmers Bullock.. | e11 | Unloader... | 80,000 | Can. Car & Fdy. |
| | *12 | Logging... | 80,000 | Can. Car & Fdy. |
| | e11 | Flat | 60,000 | Can. Car & Fdy. |
| Am. Beet Sugar Co. | †15 | Flat | 80,000 | Am. Car & Fdy. |
| Am. Extract Co. | *4 | Tank | 80,000 | Am. Car & Fdy. |
| Am. Refrig. Transit Co. | †1,000 | Refrig.... | 60,000 | Am. Car & Fdy. |
| Anheuser-Busch | *1 | Hopper... | 100,000 | Am. Car & Fdy. |
| Ann Arbor | 155 | Box | 80,000 | Standard Steel. |
| | †150 | Refrig. .. | 80,000 | Standard Steel. |
| | †475 | Box | 80,000 | West. Car & Fdy. |
| Ark. Short Leaf Lumber Co. | e30 | Logging... | 40,000 | Am. Car & Fdy. |
| Armour Car L. | 400 | Refrig. .. | 80,000 | Company shops. |
| Arms P. Horse Car Co.. | †125 | Horse ... | 60,000 | Pullman. |
| | †13 | Horse ... | 60,000 | Pullman. |
| | †13 | Horse ... | 60,000 | Pullman. |
| Ashland C. & Iron Co.. | *15 | Gondola... | 100,000 | Pressed Steel. |
| A. T. & S. F. | *50 | Ore | 100,000 | Am. Car. & Fdy. |
| | †972 | Box | 80,000 | Am. Car. & Fdy. |
| Atl. & W. Point. | 100 | Flat | 60,000 | Am. Car. & Fdy. |
| | †10 | Box | 80,000 | Am. Car. & Fdy. |
| | 100 | Box | 60,000 | Company shops. |
| | 10 | Auto | 80,000 | Company shops. |
| Atl. Birm. & AT. | e120 | Stock ... | 60,000 | Company shops. |
| Atl. Coast Line | †1,400 | Box | 60,000 | Am. Car. & Fdy. |
| | †850 | Phosph. .. | 80,000 | Standard Steel. |
| | †900 | Box | 60,000 | Standard Steel. |
| | †100 | Flat | 60,000 | Standard Steel. |
| | †150 | Ballast .. | 100,000 | Rodger Bal. |
| | e30 | Caboose... | 80,000 | Company shops. |
| | *1 | Derrick... | 100,000 | Standard Steel. |
| Atl. Seab. Desp. | †100 | Refrig. .. | 60,000 | Haskell & Barker. |
| Atlas Car Co. | *10 | Tank | 80,000 | Am. Car & Fdy. |
| Balt. & Ohio | †2,000 | Box | 80,000 | Standard Steel. |
| | †500 | Box | 80,000 | Mt. Vernon Car. |
| | *2,000 | Gondola... | 100,000 | Cambria Steel. |
| | *2,000 | Gondola... | 100,000 | Standard Steel. |
| | †1,500 | Gondola... | 100,000 | Pressed Steel. |
| | *5 | Well | 135,000 | Cambria Steel. |
| Bangor & Aroostook... | †131 | Box | 60,000 | Am. Car & Fdy. |
| | 25 | Box | 60,000 | Am. Car & Fdy. |
| Bangor Ry. & Elect. Co.. | *11 | Box | 40,000 | Simplex Self-Clear. Car. |
| Barber Ashp. Pav. Co.. | *20 | Flat | 20,000 | Am. Car & Fdy. |
| | *20 | Tank | 100,000 | Am. Car & Fdy. |
| Bear Creek Mill Co.... | e6 | Logging... | 60,000 | Am. Car & Fdy. |
| Benton Harbor & St. Joe. | e3 | Flat | 60,000 | Central Loco. |
| Bera Chem. Co. | *2 | Tank | 80,000 | Am. Car & Fdy. |
| Berwind Lumber Co. | 10 | Flat | 80,000 | Pressed Steel. |
| Berwind-White Co. | 300 | Coal | 100,000 | Cambria Steel. |
| Bethlehem Steel Co. ... | *100 | Coke | 100,000 | Am. Car. & Fdy. |
| Bingham & Garfield.... | *200 | Dump.... | 120,000 | Pressed Steel. |
| | †82 | Flat | 100,000 | Pressed Steel. |
| | *85 | Flat | 140,000 | Pressed Steel. |
| | *25 | Gondola .. | 140,000 | Pressed Steel. |
| | *20 | Box | 100,000 | Pressed Steel. |
| Birmingham. So. | e1 | Plow | 60,000 | Rodger Ballast. |
| Boston & Albany. | †12 | Caboose... | 80,000 | Laconia Car. |
| Boston & Me. | †1 | Work | 80,000 | Russell Car & Snow Plow |
| Boston Elev. | †1 | Flat | 80,000 | Russell Car & Snow Plow |
| | †1 | Wrecking | 80,000 | Russell Car & Snow Plow |

| Purchaser. | No. | Kind. | Capacity. | Builder. |
|-------------------------------------|----------|-------------|-----------|---------------------|
| Brinson | e55 | Box | 60,000 | Am. Car. & Fdy. |
| Brompton Pulp & Paper Co. | †18 | Flat | 50,000 | |
| Brown Store Co. | e6 | Logging... | 30,000 | Am. Car & Fdy. |
| Buf. Cr. & Gaul. | *100 | Hopper .. | 100,000 | Pressed Steel. |
| Buf. R. & Pittsb. | *500 | Hopper .. | 100,000 | Pressed Steel. |
| | *500 | Hopper .. | 100,000 | Standard Steel. |
| | *500 | Hopper .. | 100,000 | Cambria Steel. |
| Caddo Riv. Lumb. Co.. | e1 | Caboose... | 80,000 | Am. Car & Fdy. |
| Camacha, Rold. & Van S. | e12 | Box | 30,000 | Am. Car & Fdy. |
| Camb. & Ind. | *600 | Hopper .. | 100,000 | Cambria Steel. |
| Canadian Bldg. Co. | *12 | Flat | 80,000 | Can. Car & Fdy. |
| Canadian Collieries Co.. | *100 | Hopper... | 100,000 | Can. Car & Fdy. |
| Canadian Expl. Co. | e12 | Flat | 60,000 | Can. Car & Fdy. |
| Canadian No. | †155 | Flat | 80,000 | Can. Car & Fdy. |
| | e1,557 | Box | 60,000 | Can. Car & Fdy. |
| | e1,250 | Box | 60,000 | Nova Scotia Car. |
| | e1,250 | Hart ball. | 80,000 | Hart-Otis Car. |
| | e120 | Ore | 60,000 | Hart-Otis Car. |
| | e1200 | Stock ... | 60,000 | Crossen Car. |
| | e100 | Refrig. .. | 60,000 | Crossen Car. |
| | e121 | Caboose... | 80,000 | Crossen Car. |
| Canadian Pacific | *12,500 | Box | 80,000 | Can. Car & Fdy. |
| | d 12,000 | Box | 80,000 | Can. Car & Fdy. |
| | *1938 | Flat | 80,000 | Can. Car & Fdy. |
| | *1500 | Box | 80,000 | Pressed Steel. |
| | *1430 | Gondola... | 100,000 | Pressed Steel. |
| | *1,500 | Box | 80,000 | Am. Car & Fdy. |
| | e12,007 | Box | 60,000 | Company shops. |
| | *1,000 | Box | 80,000 | West St. Car & Fdy. |
| | *141 | Flat | 80,000 | |
| | *15 | Coal | 100,000 | |
| | a15 | Ballast .. | 100,000 | Can. Car & Fdy. |
| | a152 | Ballast .. | 100,000 | Can. Car & Fdy. |
| | e118 | Refrig. .. | 60,000 | Company shops. |
| | e1592 | Stock ... | 60,000 | Company shops. |
| | e184 | Van | 80,000 | Company shops. |
| | †890 | Tank ... | 10,000 g. | Am. Car & Fdy. |
| Canadian Ry. & Cont. Supl. Co. | e115 | Dump ... | 60,000 | Can. Car & Fdy. |
| Cent. of Ga. | 250 | Box | 80,000 | Company shops. |
| | *500 | Box | 80,000 | Am. Car & Fdy. |
| Cent. of N. J. | †250 | Ice | 80,000 | Standard Steel. |
| | *1 | Scale test. | 80,000 | Company shops. |
| Champion Lum. Co. | e32 | Flat | 80,000 | Am. Car & Fdy. |
| Chesapeake & Ohio | *300 | Flat | 80,000 | Am. Car & Fdy. |
| Chicago & East. Illinois. | †1,000 | Refrig. .. | 60,000 | Am. Car & Fdy. |
| Chicago & N. W. | †1,750 | Box | 80,000 | Pullman. |
| | †1,250 | Box | 80,000 | Am. Car & Fdy. |
| | †600 | Auto | 80,000 | West St. Car & Fdy. |
| | *500 | Flat | 100,000 | Standard Steel. |
| | *450 | Refrig. .. | 80,000 | American. |
| Chic., Burl. & Quincy... | *12,000 | Gondola... | 100,000 | Am. Car & Fdy. |
| | 1,000 | Gondola... | 80,000 | Pressed Steel. |
| | *107 | Tank ... | 10,000 g. | Am. Car & Fdy. |
| | b12,500 | Box | 80,000 | Haskell & Barker. |
| | 500 | Refrig. .. | 60,000 | Am. Car & Fdy. |
| | 1,500 | Gondola... | 80,000 | Am. Car & Fdy. |
| | b1200 | Box | 80,000 | Company shops. |
| | e1250 | Stock ... | 60,000 | Company shops. |
| | b1700 | Stock ... | 60,000 | Company shops. |
| | †130 | Way | 80,000 | Company shops. |
| | *1 | Scale test. | 80,000 | Pressed steel. |
| Chicago Gt. Western... | *115 | Hopper .. | 100,000 | Pressed steel. |
| Chic. & Ill. Midland... | 1 | Caboose... | 80,000 | Central Loco. |
| Chic., Ind. & So. | †5 | Box | 80,000 | Company shops. |

* Indicates all-steel cars.

† Indicates steel underframe cars.

a Indicates all composite cars.

b Indicates composite underframe cars.

c Indicates composite-body cars.

d Indicates steel frame cars.

e Indicates all-wood cars.

† Indicates spring draft gear.

§ Indicates friction draft gear.

| Purchaser. | No. | Kind. | Capacity. | Builder. |
|-----------------------------|----------|-------------|-----------|------------------------|
| *Chic., Indianap. & L... | †1200 | Flat | 80,000 | Haskell & Barker. |
| | †1100 | Auto | 80,000 | Haskell & Barker. |
| Chic., Memp. & Gulf.... | *\$1,000 | Coal | 100,000 | Am. Car & Fdy. |
| | e150 | Flat | 60,000 | Central Loco. |
| | e150 | Box | 60,000 | Central Loco. |
| Chic., Mil. & P. S..... | e11 | Caboose | 80,000 | Central Loco. |
| | e830 | Package | 80,000 | Company shops. |
| Chic., N. Y. & Bos. Refrig. | \$470 | Furn. | 80,000 | Company shops. |
| Chic., R. I. & Pac..... | 300 | Refrig. | 80,000 | Whipple Car. |
| | †1450 | Furn. | 80,000 | West. St. Car & Fdy. |
| | †250 | Flat | 100,000 | West. St. Car & Fdy. |
| | e125 | Caboose | 80,000 | West. St. Car & Fdy. |
| | †300 | Ballast | 100,000 | Rodger Ballast. |
| | 15 | Caboose | 80,000 | Mt. Vernon Car. |
| | 500 | Furn. | 80,000 | Pullman. |
| | 2,500 | Box | 80,000 | Pullman. |
| Chic., St. P., M. & O... | 200 | Hart cv. | 80,000 | Rodger Ballast. |
| | †\$500 | Box | 80,000 | Am. Car & Fdy. |
| | e1100 | Refrig. | 60,000 | Am. Car & Fdy. |
| Chic., T. H. & S. E.... | b*1,000 | Coal | 100,000 | Haskell & Barker. |
| Clapp Ammonia Co..... | *2 | Tank | 60,000 | Am. Car & Fdy. |
| C. C. & St. L..... | *\$1,500 | Box | 80,000 | Am. Car & Fdy. |
| Columbia Chem. Co.... | e2 | Dump | 80,000 | Am. Car & Fdy. |
| Columbia & Puget S.... | *10 | Dump | 60,000 | Kilbourne & J. |
| Consumers' Gas Co.... | *3 | Tank | 100,000 | Am. Car & Fdy. |
| Dairy Ship. Desp. | †\$100 | Refrig. | 60,000 | Mt. Vernon Car. |
| Del., Lack. & West.... | *1 | Scale test. | 80,000 | Company shops. |
| Detroit & Mack..... | e4 | Refrig. | 60,000 | Rodger Ballast. |
| Dolese Bros..... | e40 | Quarry | 40,000 | Am. Car & Fdy. |
| Dom. Iron & Steel Co... | 25 | Flat | 80,000 | Can. Car & Fdy. |
| | 25 | Gondola | 80,000 | Can. Car & Fdy. |
| | 60 | Ore | 80,000 | Can. Car & Fdy. |
| | e13 | Flat | 60,000 | Can. Car & Fdy. |
| | e15 | Unloaders | 60,000 | Can. Car & Fdy. |
| Dominion Bldg. Co.... | e1350 | Box | 60,000 | Mt. Vernon Car. |
| Dominion Eq. & Supl. Co. | e150 | Flat | 60,000 | Mt. Vernon Car. |
| Dul., Win. & Pac. | e120 | Stock | 60,000 | Mt. Vernon Car. |
| | e110 | Refrig. | 60,000 | Mt. Vernon Car. |
| | †6 | Box | 40,000 | Am. Car & Fdy. |
| Durham & Co..... | e113 | Flat | 60,000 | Company shops. |
| East Br. T. R. R. & C. Co. | e1 | Coal | 40,000 | Company shops. |
| Eastman, Gardiner & Co. | *3 | Flat | 80,000 | Am. Car & Fdy. |
| Edgar Lumb. Co..... | e10 | Logging | 40,000 | Am. Car & Fdy. |
| E. Tenn. & W. N. C.... | e15 | Hopper | 60,000 | Company shops. |
| Elk. & Allegh..... | e2 | Box | 60,000 | Ga. Car Co. |
| | e2 | Flat | 60,000 | Ga. Car Co. |
| Elk & Lit. Kan..... | e6 | Box | 40,000 | Am. Car & Fdy. |
| | e6 | Hopper | 40,000 | Am. Car & Fdy. |
| England & Cl. L..... | 1 | Caboose | 80,000 | Central Loco. |
| Eric | †\$300 | Auto | 80,000 | Am. Car & Fdy. |
| | †\$1,000 | Box | 80,000 | Am. Car & Fdy. |
| | †\$1,000 | Hop-gon. | 100,000 | Standard Steel. |
| | †\$1,000 | Gondola | 100,000 | Pressed Steel. |
| | †\$500 | Flat | 100,000 | Company shops. |
| | †\$100 | Refrig. | 60,000 | Pullman. |
| | †\$100 | Refrig. | 60,000 | West. St. Car & Fdy. |
| Escanaba & L. Superior.. | e15 | Flat | 80,000 | Natl. Ry. Equip. |
| Esquimalt & Nanaimo... | e20 | Ballast | 80,000 | Hart-Otis. |
| | e160 | Flat | 80,000 | Hart-Otis. |
| Evansv. Sub. & N..... | e12 | Gondola | 60,000 | |
| F. H. Hopkins & Co... | e14 | Unloaders | 80,000 | Can. Car & Fdy. |
| | e1 | Sn. plow. | 80,000 | Can. Car & Fdy. |
| Fla. East Coast | †\$150 | Gondola | 80,000 | Pressed Steel. |
| | †\$150 | Flat | 80,000 | Pressed Steel. |
| Florida & Alabama.... | e10 | Flat | 60,000 | Central Loco. |
| Fonda, Johnst. & Glovers. | e1 | Flat | 60,000 | Am. Car & Fdy. |
| Fordyce & Prin. | e12 | Box | 40,000 | |
| | †\$10 | Log. | 60,000 | |
| Fouche River Valley... | e15 | Logging | 40,000 | Am. Car & Fdy. |
| Frost-Johnson Lumb. Co. | e48 | Logging | 60,000 | Am. Car & Fdy. |
| Ft. Worth & Denver City | *\$100 | Tank | 10,000 g. | American. |
| G. Amsinck & Co..... | e6 | Box | 40,000 | Am. Car & Fdy. |
| Ga., Fla. & Alabama.... | e11 | Caboose | 80,000 | Company shops. |
| General Chem. Co..... | 20 | Refrig. | 60,000 | German-Amer. |
| Georgia | †\$250 | Box | 60,000 | Pullman. |
| Gideon & No. Is..... | e11 | Caboose | 80,000 | Company shops. |
| | e120 | Logging | 60,000 | Company shops. |
| Goodyear Lumber Co.... | e2 | Skidder | 80,000 | Am. Car & Fdy. |
| Grand Rapids & Ind.... | *\$76 | Flat | 100,000 | Pressed Steel. |
| Grand Trunk | 1,000 | Box | 80,000 | Can. Car & Fdy. |
| | 2,000 | Box | 80,000 | Pressed Steel. |
| | 1,000 | Hopper | 80,000 | Pressed Steel. |
| Great Northern | 400 | Hopper | 100,000 | Haskell & Barker. |
| | 75 | Tank | 80,000 | Pressed Steel. |
| | 1,500 | Refrig. | 80,000 | Haskell & Barker. |
| | 1,000 | Box | 80,000 | Haskell & Barker. |
| Guffy Refining Co..... | *80 | Tank | 80,000 | Am. Car & Fdy. |
| Heald & Co..... | *4 | Tank | 100,000 | Rodger Ballast. |
| Henderson Lumber Co... | e10 | Logging | 80,000 | Am. Car & Fdy. |
| Hill, Price & Hill..... | e10 | Logging | 20,000 | Am. Car & Fdy. |
| Hocking Valley | e110 | Caboose | 80,000 | Company shops. |
| Howe Lumber Co..... | e6 | Logging | 40,000 | Am. Car & Fdy. |
| Illinois Central | †\$100 | Logging | 80,000 | Company shops. |
| | †\$500 | Refrig. | 60,000 | Company shops. |
| | *170 | Box | 60,000 | Can. Car & Fdy. |
| | *121 | Dump | 100,000 | Can. Car & Fdy. |
| | †\$120 | Flat | 80,000 | Can. Car & Fdy. |
| | e1100 | Refrig. | 60,000 | Can. Car & Fdy. |
| | †\$50 | Flat | 80,000 | Nova Scotia Car. |
| | †\$50 | Flat | 80,000 | Nova Scotia Car. |
| | e12 | Stock | 60,000 | Nova Scotia Car. |
| | *\$230 | Box | 60,000 | Can. Car & Fdy. |
| | e30 | Box | 60,000 | Rathbun Co. |
| | *\$25 | Dump | 100,000 | Can. Car & Fdy. |
| | e15 | Caboose | 80,000 | Company shops. |
| | *20 | Tank | 8,000 g. | Warren Fdry. Co. |
| Independ. Oil Co..... | 69 | Tank | 80,000 | Am. Car & Fdy. |
| Indian Refining Co.... | e3 | Logging | 40,000 | Am. Car & Fdy. |
| Jones Co. Lumber Co... | e125 | Box | 60,000 | Am. Car & Fdy. |
| Jonesb., Lake C. & East. | e124 | Dump | 40,000 | West. Wheeled Scraper. |
| Kansas City Terminal... | *19 | Tank | 100,000 | Am. Car & Fdy. |
| Keith Car Co..... | e4 | Logging | 30,000 | Am. Car & Fdy. |
| Kentucky Lumber Co... | †10 | Box | 80,000 | Company shops. |
| L. S. & M. S..... | †\$4,000 | Box | 80,000 | Am. Car & Fdy. |
| Lange Soap Co..... | *14 | Tank | 8,000 g. | Am. Car & Fdy. |
| Lantz Bros. Co. | *1 | Tank | 80,000 | Am. Car & Fdy. |
| Laramie H. P. & P.... | *\$25 | Flat | 100,000 | Bettendorf. |

| Purchaser. | No. | Kind. | Capacity. | Builder. |
|----------------------------|----------|----------|-----------|----------------------|
| Laurel R. Lumber Co.... | e12 | Logging | 80,000 | Am. Car & Fdy. |
| Lehigh & New England.. | *\$1500 | Hopper | 100,000 | Cambria. |
| | †\$300 | Box | 60,000 | Am. Car & Fdy. |
| Lehigh & Hudson..... | †\$6 | Flat | 80,000 | Standard Steel. |
| Lehigh Coal & N. Co.... | 25 | Mine | 100,000 | Rodger Ballast. |
| Lehigh Valley R. R.... | *25 | ..... | 100,000 | Rodger Ballast. |
| Lehigh Valley | †\$250 | ..... | 60,000 | Am. Car & Fdy. |
| Live Oak P. & G..... | †\$25 | Logging | 60,000 | Am. Car & Fdy. |
| Live Poultry T..... | †\$318 | Poultry | 40,000 | Am. Car & Fdy. |
| La. & Ark..... | *\$4 | Flat | 80,000 | Am. Car & Fdy. |
| | *\$3 | Flat | 80,000 | Mt. Vernon Car. |
| La. & Pine Bl..... | 40 | Logging | 80,000 | Am. Car & Fdy. |
| Louisville, Hend. & St. L. | e110 | Gondola | 80,000 | Rodger Ballast. |
| Louisville & Nashville.. | †\$1,000 | ..... | 100,000 | Mt. Vernon Car. |
| Louisville & Nashville.. | †\$500 | Hopper | 100,000 | Company shops. |
| | †\$900 | Box | 80,000 | Company shops. |
| | e120 | Caboose | 80,000 | Company shops. |
| | †\$500 | Gondola | 100,000 | Company shops. |
| | †\$500 | Hopper | 100,000 | Company shops. |
| | †\$100 | Beer | 80,000 | Company shops. |
| Magnolia Petroleum Co.. | *50 | Tank | 80,000 | Am. Car & Fdy. |
| | *25 | Tank | 100,000 | Am. Car & Fdy. |
| McAlpine Mining Co.... | *50 | Ore | 80,000 | Pressed Steel. |
| McCloud River | e140 | Flat | 60,000 | Company shops. |
| | b13 | Water | 100,000 | Company shops. |
| Merchants Des. Tr. Co.. | †\$1,000 | Refrig. | 80,000 | Company shops. |
| Mexico N. W..... | *\$500 | Logging | 80,000 | Bettendorf. |
| Mich. Cent..... | †\$1,500 | Box | 80,000 | Pullman. |
| | †\$1,000 | Box | 80,000 | Am. Car & Fdy. |
| Mich. Sugar Co. | *2 | Tank | 100,000 | Am. Car & Fdy. |
| Midl. Pa. R. R..... | †3 | Box | 60,000 | Am. Car & Fdy. |
| McCann Sugar Ref. Co.. | *4 | Tank | 80,000 | Am. Car & Fdy. |
| Missouri Pacific | *\$500 | Flat | 80,000 | Am. Car & Fdy. |
| | e1400 | Stock | 80,000 | Am. Car & Fdy. |
| Missouri, Okla. & Gulf. | *1 | Tank | 80,000 | Am. Car & Fdy. |
| M., St. P. & S. S. M.... | e135 | Caboose | 80,000 | Am. Car & Fdy. |
| | e1750 | Box | 80,000 | Am. Car & Fdy. |
| Minn., Dak. & W..... | e1100 | Flat | 80,000 | Haskell & Barker. |
| Mo., Kan. & Tex..... | e1249 | Box | 60,000 | Company shops. |
| | e117 | Refrig. | 60,000 | Am. Car & Fdy. |
| | †\$39 | Gondola | 100,000 | Am. Car & Fdy. |
| | †\$34 | Flat | 100,000 | Am. Car & Fdy. |
| | e118 | Caboose | 80,000 | Mt. Vernon Car. |
| Mo. Okla. & Gulf | e500 | Gondola | 80,000 | Am. Car & Fdy. |
| | e12 | Caboose | 80,000 | Sheffield Car & Fdy. |
| Mo. Pac..... | e12,000 | Gondola | 100,000 | Am. Car & Fdy. |
| | †\$500 | Flat | 80,000 | Am. Car & Fdy. |
| | e1400 | Stock | 80,000 | Am. Car & Fdy. |
| | e1500 | Stock | 80,000 | Mt. Vernon Car. |
| | 500 | Box | 80,000 | Standard Steel. |
| | †\$500 | Box | 80,000 | Am. Car & Fdy. |
| | †\$500 | Furn. | 80,000 | Am. Car & Fdy. |
| | †\$500 | Auto | 80,000 | Am. Car & Fdy. |
| Muskogee Lumber Co.. | *8 | Tank | 60,000 | Mann-McCann Co. |
| | e2 | Spreader | 60,000 | Am. Car & Fdy. |
| National Ammonia Co... | *13 | ..... | 80,000 | Am. Car & Fdy. |
| National Lime Store Co. | †30 | Skip | 70,000 | Am. Car & Fdy. |
| North & South Car..... | 2 | Caboose | 80,000 | Pressed Steel. |
| N. C. & St. L..... | †\$200 | Box | 80,000 | Am. Car & Fdy. |
| National Rys. of Mex... | *\$200 | Tank | 100,000 | Am. Car & Fdy. |
| | †\$200 | Flat | 80,000 | Am. Car & Fdy. |
| Nev. Copper Belt..... | *\$45 | Ore | 100,000 | Pressed Steel. |
| New OrL., Mobile & Chic. | e16 | Caboose | 80,000 | Ga. Car & Loco. |
| N. Y. C. & H. R..... | *\$5 | Pit | 120,000 | Standard Steel. |
| | †\$500 | Box | 80,000 | Am. Car & Fdy. |
| | †\$1,500 | Box | 80,000 | Pullman. |
| | *2,500 | Hopper | 100,000 | Am. Car & Fdy. |
| | *\$500 | Flat | 100,000 | Pullman. |
| | *\$350 | Gondola | 100,000 | Standard Steel. |
| | †\$150 | Ballast | 100,000 | Rodger Ballast. |
| | 10 | Flat | 80,000 | |
| N. Y. N. H. & H..... | †\$1,200 | Box | 60,000 | Keith Car & M. |
| | *\$300 | Hopper | 100,000 | Keith Car & M. |
| N. Y. O. & Western.... | †\$15 | Flat | 80,000 | Am. Car & Fdy. |
| | †\$450 | Gondola | 80,000 | Am. Car & Fdy. |
| N. Y. Susq. & Western.. | *\$1,000 | Hopper | 100,000 | Standard Steel. |
| Norfolk So. | †\$500 | Box | 60,000 | Am. Car & Fdy. |
| Norfolk & Western.... | *\$1,000 | Hopper | 115,000 | Company shops. |
| | *500 | Gondola | 115,000 | Am. Car & Fdy. |
| Oil Seeds Co. | *2 | Tank | 60,000 | Company shops. |
| Opel. Gulf & N. E..... | e17 | Box | 80,000 | Am. Car & Fdy. |
| Ouachita & N. W..... | e120 | Logging | 50,000 | Am. Car & Fdy. |
| Pacific Coast | e120 | Flat | 40,000 | Company shops. |
| | e110 | Box | 40,000 | Company shops. |
| Pac. & Id. No..... | e3 | Ballast | 80,000 | Rodger Ballast. |
| Peerless Port. Cement Co. | e4 | Hopper | 80,000 | Am. Car & Fdy. |
| Penna. Lines West.... | 300 | Box | 80,000 | Pressed Steel. |
| | *56 | Flat | 80,000 | Pressed Steel. |
| Pennsylvania Railroad.. | *500 | Gondola | 100,000 | Am. Car & Fdy. |
| | *150 | Hopper | 100,000 | Am. Car & Fdy. |
| | *\$900 | Hopper | 100,000 | Cambria. |
| | *250 | Hopper | 100,000 | Pressed Steel. |
| | 1,000 | Hopper | 100,000 | Company shops. |
| | *850 | Gondola | 100,000 | Cambria Steel. |
| Philadelphia & Reading.. | †1 | Poling | 80,000 | Company shops. |
| Philadelphia Quartz Co.. | *7 | Tank | 100,000 | Am. Car & Fdy. |
| Pittsburgh & L. Erie.... | †\$1,000 | Gondola | 100,000 | Pressed Steel. |
| | *\$1,000 | Coke | 80,000 | Am. Car & Fdy. |
| | *\$3,000 | Box | 80,000 | Pressed Steel. |
| Pittsburgh & Shawmut... | †\$1,500 | Hopper | 100,000 | Am. Car & Fdy. |
| | *\$500 | Gondola | 100,000 | Pressed Steel. |
| | *\$50 | Flat | 80,000 | Pressed Steel. |
| | †\$50 | Box | 60,000 | Am. Car & Fdy. |
| | b15 | Caboose | 80,000 | Am. Car & Fdy. |
| Polar Wave Ice & Fuel | e16 | Ice | 80,000 | Am. Car & Fdy. |
| Co. | *\$1 | Gondola | 100,000 | Pressed Steel. |
| Pittsb., Al. & McK. R... | e5 | Flat | 40,000 | Wason Mfg. Co. |
| Portl. Grey & L. | | | | |

* Indicates all-steel cars.

† Indicates steel underframe cars.

a Indicates all composite cars.

b Indicates composite underframe cars.

c Indicates composite-body cars.

d Indicates steel frame cars.

e Indicates all-wood cars.

† Indicates spring draft gear.

§ Indicates friction draft gear.

| Purchaser. | No. | Kind. | Capacity. | Builder. |
|---------------------------|--------|------------|-----------|------------------------|
| Portland Ry. L. & P. Co. | e10 | Ballast | 80,000 | Rodger Ballast. |
| Prescott & No. West,... | e20 | Flat | 60,000 | |
| Prince Edw. Island.... | e15 | Hart conv. | 60,000 | Company shops. |
| Que. Ry. Light & Power. | 1 | Tank | 3,134 g. | Company shops. |
| | e148 | Gondola | 60,000 | Hunt. & B. Top Mt.R.R. |
| | e110 | Box | 60,000 | Central Loco. |
| | e25 | Box | 60,000 | Atlantic Equip. Co. |
| Quebec Central | e150 | Rack | 60,000 | Company shops. |
| Queen & Crescent..... | *100 | Hopper | 100,000 | Standard Steel. |
| Richmond, Fred. & Pot.. | *150 | Box | 80,000 | Standard Steel. |
| | *50 | Gondola | 100,000 | Standard Steel. |
| Ried-Newfoundland | 50 | Box | ..... | Company shops. |
| Roaring Fork | 1 | Box | 60,000 | Natl. Ry. Equip. |
| Robinson Co., Wm. A... | *1 | Tank | 60,000 | Am. Car & Fdy. |
| Swift & Co. | †150 | ..... | ..... | Am. Car & Fdy. |
| St. Louis Refrig. Car Co. | *1 | Tank | 30,000 | Am. Car & Fdy. |
| Southwestern Ref. Co. .. | *1 | Tank | 60,000 | Am. Car & Fdy. |
| | *4 | Tank | 80,000 | Am. Car & Fdy. |
| | *1 | Tank | 100,000 | Am. Car & Fdy. |
| | e1 | Flat | 60,000 | Natl. Ry. Equip. |
| | e4 | Gondola | 65,000 | Buffalo Car Co. |
| St. Louis & Han..... | e25 | ..... | 60,000 | Mather Live Stock Tr. |
| St. Louis & San F..... | e2500 | Refrig. | 60,000 | Am. Car & Fdy. |
| | *250 | Flat | 100,000 | Am. Car & Fdy. |
| St. Louis S. W..... | e1620 | Box | 60,000 | Am. Car & Fdy. |
| | e500 | Auto | 60,000 | Am. Car & Fdy. |
| | e500 | Refrig. | 60,000 | Am. Car & Fdy. |
| | *40 | Flat | 80,000 | Am. Car & Fdy. |
| Salem, F. C. & W..... | e36 | Flat | 60,000 | |
| San Ant. & Ar. Pass.... | †14 | Fruit | 60,000 | Mt. Vernon. |
| | †12 | Stock | 60,000 | Mt. Vernon. |
| | †14 | Fruit | 60,000 | American. |
| | †12 | Stock | 60,000 | American. |
| | †12 | Refrig. | 60,000 | Am. Car & Fdy. |
| | *25 | Tank | 80,000 | Am. Car & Fdy. |
| San Antonio & Aran. P. | 5 | Fruit | 60,000 | Mt. Vernon Car. |
| | 2 | Stock | 80,000 | Mt. Vernon Car. |
| San Antonio & Aran. P.. | *25 | Tank | 80,000 | Rodger Ballast. |
| San D. & Ariz..... | *12 | Tank | 12,500 g. | Pressed Steel. |
| San D., El P. & St. L... | e25 | Box | 60,000 | Cent. Loco. & Car. |
| | e10 | Gondola | 60,000 | Cent. Loco. & Car. |
| | e10 | Stock | 60,000 | Cent. Loco. & Car. |
| | e1 | Caboose | ..... | Cent. Loco. & Car. |
| San Diego Southern.... | †12 | Flat | 50,000 | Company shops. |
| Seaboard Air Line..... | *1,000 | Box | 60,000 | Pressed Steel. |
| | *200 | Phosp. | 100,000 | Pressed Steel. |
| | †30 | Caboose | ..... | Pressed Steel. |
| Seaboard Ref. Co. | *1 | Tank | 80,000 | Am. Car & Fdy. |
| Southwest. Mechan. Co.. | †10 | ..... | 60,000 | Am. Car & Fdy. |
| Steinhardt & Co. | *5 | ..... | 80,000 | Am. Car & Fdy. |
| Solvay Process Co..... | *825 | Tank | 100,000 | German-Amer. |
| Southern Ry. | *1,200 | Gondola | 100,000 | Pressed Steel. |
| | *513 | Gondola | 100,000 | Mt. Vernon Car. |
| | †1,100 | Box | 60,000 | Lenoir Car. |
| | †252 | Flat | 100,000 | Standard Steel. |
| | e155 | Flat | 60,000 | Fitz-hugh-Luther. |
| Stan. Mer. & Ph..... | e10 | Ballast | 80,000 | Rodger Ballast. |
| Stone & Webster..... | e125 | Flat | 80,000 | Can. Car & Fdy. |
| Sydney & Louisb..... | e25 | Gondola | 20,000 | Can. Car & Fdy. |
| | *50 | Ore | 100,000 | Can. Car & Fdy. |
| | *50 | Coal | 100,000 | Can. Car & Fdy. |

| Purchaser. | No. | Kind. | Capacity. | Builder. |
|--------------------------|--------|---------|-----------|-------------------|
| Swift Ref. Tr. Co..... | †200 | Refrig. | 60,000 | Company shops. |
| | *50 | Tank | 80,000 | Pressed Steel. |
| Tampa Elec. Co. | e2 | Flat | 40,000 | Am. Car & Fdy. |
| Temiscouta | e16 | Box | 60,000 | Company shops. |
| | e11 | Flat | 60,000 | Company shops. |
| Tex. & Pac. Coal Co.... | *100 | Gondola | 100,000 | Pressed Steel. |
| Texas City Trans..... | e110 | Flat | 80,000 | Haskell & Barker. |
| Texas Co. | *140 | Tank | 80,000 | Am. Car & Fdy. |
| | *70 | Tank | 60,000 | Am. Car & Fdy. |
| | *80 | ..... | 80,000 | Am. Car & Fdy. |
| | †20 | ..... | 60,000 | Am. Car & Fdy. |
| Thomas Iron Co..... | *10 | Hopper | 100,000 | Cambria Steel. |
| Thompson Bros. Lum. Co. | e15 | Logging | 50,000 | Am. Car & Fdy. |
| Terrell Cotton Oil Co... | *5 | Tank | 80,000 | Am. Car & Fdy. |
| Tidewater & West..... | e15 | Box | 30,000 | Company shops. |
| | e15 | Flat | 40,000 | Company shops. |
| Toledo & Ohio Cen.... | †100 | Ballast | 100,000 | Rodger Ballast. |
| Toledo & Ohio Central.. | e100 | Ballast | 100,000 | Rodger Ballast. |
| Trinidad & Br. Valley.. | e14 | Box | 60,000 | Pullman. |
| Twin. Met. & Pot..... | †1 | Flat | 50,000 | Am. Car & Fdy. |
| | †7 | Box | 50,000 | Am. Car & Fdy. |
| | †10 | Gondola | 50,000 | Am. Car & Fdy. |
| | e2 | Ballast | 40,000 | Rodger Ballast. |
| | e9 | Box | 40,000 | Company shops. |
| | e18 | Flat | 40,000 | Company shops. |
| | e15 | Stock | 40,000 | Company shops. |
| | e1 | Caboose | ..... | Company shops. |
| Unadilla Valley..... | e2 | Box | 60,000 | Central Loco. |
| Union Refr. Tr..... | †150 | Refrig. | 60,000 | Am. Car & Fdy. |
| Union Tank Line..... | 300 | Tank | ..... | Company shops. |
| | *500 | Tank | ..... | Pressed Steel. |
| United Fruit Co..... | †25 | Flat | 20,000 | Magor Car Co. |
| | †25 | Flat | 50,000 | Youngstown Car. |
| | †50 | Fruit | 40,000 | Magor Car Co. |
| Universal Supply Co. ... | *1 | Coal | 100,000 | Am. Car & Fdy. |
| Urania Lumber Co..... | e5 | Logging | 60,000 | Am. Car & Fdy. |
| Union Petroleum Co.... | †1 | ..... | ..... | Am. Car & Fdy. |
| Van Sant Lumber Co.... | e3 | Logging | 20,000 | Am. Car & Fdy. |
| Vandalia | †147 | Box | 100,000 | Pressed Steel. |
| | e15 | Caboose | ..... | Company shops. |
| Virginia & S. W..... | *2600 | Gondola | 100,000 | Pressed Steel. |
| | †65 | Box | 60,000 | Lenoir Car. |
| Virginian | *1,000 | Hopper | 100,000 | Pressed Steel. |
| W. D. Gardner Co..... | *5 | Tank | 60,000 | Am. Car & Fdy. |
| Wabash-Pittsburgh T.... | *500 | Hopper | 100,000 | Pressed Steel. |
| | *500 | Hopper | 100,000 | Standard Steel. |
| | *500 | Hopper | 100,000 | Standard Steel. |
| | e35 | Cabin | ..... | Company shops. |
| West. Maryland | e11 | Flat | 60,000 | Can. Car & Fdy. |
| | 100 | Freight | ..... | Pressed Steel. |
| W. P. McNeil & Co.... | *1 | Tank | 60,000 | Am. Car & Fdy. |
| Woodward Iron | e2 | Refrig. | 60,000 | Am. Car & Fdy. |
| John R. Walsh..... | *10 | Tank | 100,000 | Am. Car & Fdy. |
| Walter Brew. Co..... | *10 | Tank | 100,000 | Am. Car & Fdy. |
| W. Va. Pulp & Paper Co. | e45 | Logging | 60,000 | Am. Car & Fdy. |
| Wasau So. Lumber Co.. | | | | |

* Indicates all-steel cars. c Indicates composite-body cars.
† Indicates steel underframe cars. d Indicates steel frame cars.
a Indicates all composite cars. e Indicates all-wood cars.
b Indicates composite underframe. † Indicates spring draft gear.
cars. § Indicates friction draft gear.

PASSENGER CARS ORDERED IN 1911.

| Purchaser. | No. | Kind. | Builder. |
|-------------------------|------|--------------------|----------------------|
| Algoma C. & H. Bay.... | 26 | First class | Canadian Car & Fdy. |
| | 22 | Bagg. & exp. | Canadian Car & Fdy. |
| | 24 | Second class | Preston Car & Co. |
| Ann Arbor..... | *5 | Motor | McKeen Motor Car Co. |
| | †1 | Observation | Pullman. |
| | †2 | Coaches | Pullman. |
| A. T. & S. F..... | †10 | Bagg. | Pullman. |
| | †15 | Baggage | Am. Car & Fdy. |
| | †88 | Dining | Pullman. |
| | †83 | Buffet chair | Pullman. |
| | †84 | Buffet baggage | Pullman. |
| | †83 | Baggage & smkg. | Pullman. |
| | †82 | Parlor | Pullman. |
| Arkansas Central | 1 | Coach | Central Loco. & Car. |
| | 1 | Mail & bagg. | Central Loco. & Car. |
| Atlanta & W. P..... | *4 | Postal | American. |
| | †2 | Coach | American. |
| Atlantic C. L..... | †25 | Coach | Pullman. |
| | †14 | Pass. & bag. | Pullman. |
| | †39 | Express | Barney & Smith. |
| | †13 | Combination | Barney & Smith. |
| | *83 | Postal | Pressed Steel Car. |
| Balt. & Ohio..... | *10 | Postal | Pullman. |
| | †84 | Dining | Pullman. |
| | *10 | Baggage | Barney & Smith. |
| Bangor Ry. & Electric.. | †1 | Electric | J. G. Brill. |
| Bingham & Garf..... | 3 | Coach | Central Loco. & Car. |
| Boston & Maine..... | †105 | Coach | Bradley Car. |
| | †8 | Smoking | Bradley Car. |
| | †8 | Coach | Laconia Car. |
| | †10 | Smoking | Laconia Car. |
| | †41 | Coach | Laconia Car. |
| | †5 | Smoking | Laconia Car. |
| | †46 | Baggage | Laconia Car. |
| | *13 | Postal | Laconia Car. |
| | †31 | Smoking & bag. | Wason. |
| | †10 | Bagg. & mail | Wason. |
| | b3 | Milk | Laconia Car. |
| Boston Elevated..... | *40 | Subway | Standard Steel. |
| | *20 | Coach | Pressed Steel. |
| | *25 | Semi-convertible | St. Louis Car. |
| | †25 | Semi-convertible | Osgood-Bradley. |
| Boston, Rev. Beach & L. | 2 | Combination | Laconia Car. |
| | 6 | Passenger | Laconia Car. |
| Brinson Ry..... | †2 | 1st class | Am. Car & Fdy. |
| | †2 | Bagg., mail & Exp. | Am. Car & Fdy. |
| Buff., Roch. & P..... | †83 | Coach | Pullman. |
| Calgary Mun. | †12 | 1st class | Preston Car. |
| Calgary | *1 | Sprinkler | Preston Car. |
| | *1 | Scenic | Preston Car. |

| Purchaser. | No. | Kind. | Builder. |
|--------------------------|-----|-------------------|----------------------|
| Cambria & Ind. | 1 | Pass. & bagg. | Am. Car & Fdy. |
| Camacho, Rold. & Van S. | 6 | Coaches | Am. Car & Fdy. |
| Canadian No. | †20 | 1st class | Canadian Car & Fdy. |
| | †4 | Dining | Canadian Car & Fdy. |
| | †8 | 2d class | Canadian Car & Fdy. |
| | 10 | Baggage | Canadian Car & Fdy. |
| | †4 | Sleeping | Canadian Car & Fdy. |
| | †6 | Sleeping | Canadian Car & Fdy. |
| | †10 | 2d class | Crosen Car. |
| | †6 | 2d class & bagg. | Preston Car & Coach. |
| | b2 | Baggage & mail | Preston Car & Coach. |
| | †2 | Cafe-parlor | Canadian Car & Fdy. |
| Canadian Pacific | †6 | Comp. sleeping | Company shops. |
| | †16 | Sleeping | Company shops. |
| | †10 | Sleeping | Barney & Smith. |
| | †6 | Observation | Company shops. |
| | †3 | Cafe-parlor | Company shops. |
| | †10 | Dining | Company shops. |
| | *11 | 1st class | Company shops. |
| | †35 | 1st class | Company shops. |
| | †15 | 1st class & smkg. | Company shops. |
| | †25 | Suburban | Company shops. |
| | †6 | 2d class | Company shops. |
| | †18 | 1st class | Company shops. |
| | †31 | Colonist | Company shops. |
| | †32 | Baggage & exp. | Company shops. |
| | †2 | Baggage & smkg. | Company shops. |
| | †2 | Mail & express | Company shops. |
| | 3 | Business | Company shops. |
| Cath. Church Exten. Soc. | †a1 | Chapel car | Barney & Smith. |
| Central of Ga. | †4 | Coach | Pullman. |
| | †4 | Parlor | Pullman. |
| | †5 | Baggage and mail | Pullman. |
| Central of N. J..... | *10 | Coach | Harlan & Holl. |
| | †6 | Combination | Harlan & Holl. |
| | †13 | Obser. parlor | Company shops. |
| | †3 | Baggage | Company shops. |
| Chesapeake & Ohio | †15 | Coach | Pullman. |
| | †81 | Dining | Pullman. |
| | *84 | Coach | Standard Steel. |
| | *84 | Pass. & bagg. | Standard Steel. |
| | *84 | Pass. & bagg. | Standard Steel. |
| | *85 | Postal | Pressed Steel. |

* Indicates all-steel cars. † Indicates gas lighting.
† Indicates steel underframe cars. ‡ Indicates electric lighting.
1 Indicates composite body cars. a Indicates acetylene lighting.
2 Indicates composite underframe. b Indicates oil lighting.
cars. † Indicates wood and steel under-
frame cars.

| Purchaser. | No. | Kind. | Builder. |
|-----------------------------|------|--------------------|----------------------|
| Chesapeake West. | †§10 | Express | Company shops. |
| Chicago & East. Ill. | 1 | Coach | Central Loco. & Car. |
| | 7 | Mail | Am. Car & Fdy. |
| | 4 | Coach | Am. Car & Fdy. |
| | 2 | Chair | Am. Car & Fdy. |
| | 3 | Baggage | Am. Car & Fdy. |
| Chicago, Bur. & Quincy. | †§2 | Lounging | Pullman. |
| Chi., Indianapolis & L... | †§5 | Postal | Standard Steel. |
| | †§2 | Combination | Barney & Smith. |
| | †§3 | Coach | Barney & Smith. |
| | †§2 | Parlor | Barney & Smith. |
| | †§1 | Dining | Barney & Smith. |
| Chicago, Memphis & Ga. | b1 | Coach | Central Loco. & Car. |
| Chi., Mil., & St. Paul... | †§4 | Mail | Am. Car & Fdy. |
| Chicago, Mil. & P. S. | 84 | Baggage | Am. Car & Fdy. |
| | 20 | Exp. refrig. | Company shops. |
| Chi. & North Western... | †§15 | Postal | Pullman. |
| Chi., Rock Island & Pac. | †§11 | Bagg. & mail. | Pullman. |
| | †§30 | Postal | Pullman. |
| Chi., St. P., Minn. & O. | †§4 | Baggage | Pullman. |
| | †§4 | Postal | Pullman. |
| Cleve., Cin., Chi. & St. L. | †§10 | Postal | Pressed Steel. |
| Coppell, Herbert | †§1 | Private | Pullman. |
| Cuba R. R. | 12 | Coach | Am. Car & Fdy. |
| | 4 | Sleeping | Am. Car & Fdy. |
| | 3 | Bagg. & mail. | Am. Car & Fdy. |
| Delaware & Hudson.... | †§1 | Gas-elect. motor. | General Electric. |
| Del. Lack. & Western.... | †§3 | Coach & smkg. | Barney & Smith. |
| | †§2 | Dining | Barney & Smith. |
| | †§12 | Milk | Company shops. |
| | †§2 | 1st class | Can. Pac. Ry. |
| Dom. Atlantic | †§6 | Coach | Am. Car & Fdy. |
| Duluth, Missabe & N.... | †§2 | Bagg. & mail | Am. Car & Fdy. |
| Dul. So. Sh. & At.... | †§1 | Baggage | Am. Car & Fdy. |
| Durh. & So. | †b1 | Baggage | Am. Car & Fdy. |
| | 7 | Mail | Am. Car & Fdy. |
| Edmonton Radial | †§4 | Closed | Preston Car. |
| El Paso & S. W.... | †§2 | Postal | Pullman. |
| | †§3 | Baggage | Pullman. |
| | †§4 | Coach | Pullman. |
| | †§2 | Chair | Pullman. |
| Erie | †§10 | Coach | Barney & Smith. |
| | †§5 | Combination | Pullman. |
| | †§25 | Suburban | Pullman. |
| | †§25 | Express | Barney & Smith. |
| Fairch. & N. E. | 1 | Coach | Central Loco. & Car. |
| Florida Central | 1 | Combination | Central Loco. & Car. |
| Florida East Coast | †§7 | Coach | Pullman. |
| | †§4 | Express | Pullman. |
| | †§3 | Postal | Pullman. |
| Ft. Dodge Des M. & So. | †§1 | Coach | Company shops. |
| Frederick | †§2 | Combination | J. G. Brill. |
| Georgia | b4 | Passenger | Company shops. |
| Georgia & Florida.... | 4 | Coach | Central Loco. & Car. |
| | 1 | Mail & exp. | Central Loco. & Car. |
| | 2 | Sleeping | Central Loco. & Car. |
| Georgia Northern | 2 | Coach | Central Loco. & Car. |
| | 1 | Combination | Central Loco. & Car. |
| Grand Trunk | †§25 | Coach | Pullman. |
| | 25 | Coach | Am. Car & Fdy. |
| | 25 | Bagg. & exp. | Am. Car & Fdy. |
| Great Northern | †§15 | Baggage | Barney & Smith. |
| | †§10 | Mail, bagg. & exp. | Barney & Smith. |
| | †§10 | Postal | Barney & Smith. |
| Guelph Radial | †§2 | 1st class | Preston Car. |
| Hamilton | †§6 | 1st class | Preston Car. |
| Harriman Lines | †§5 | Postal | Pullman. |
| | 2 | Private | Pullman. |
| | †§53 | Bagg. & mail. | Pullman. |
| | †§6 | Coach & postal. | Pullman. |
| Hawley, Edwin H.... | †§1 | Private | Pullman. |
| Hocking Valley | †§10 | Coach | Pullman. |
| | †§15 | Baggage | Company shops. |
| Illinois Central | †§10 | Bagg. & exp. | Pullman. |
| | †§6 | Postal | Pullman. |
| | †§8 | Coach | Pullman. |
| | †§15 | Coach | Pullman. |
| | †§3 | Observ. club | Pullman. |
| Intercolonial | †§2 | Dining | Pullman. |
| | †§2 | Baggage | Canadian Car & Fdy. |
| | †§2 | Postal | Nova Scotia Car. |
| | †§2 | 1st class | Preston Car & Coach. |
| | †§2 | 1st class | Canadian Car & Fdy. |
| | †§3 | Colonist | Canadian Car & Fdy. |
| Kanawha & Michigan.... | †§1 | Milk | Company shops. |
| | †§3 | Coach | Pullman. |
| | †§1 | Bagg., mail & exp. | Pullman. |
| | †§1 | Baggage | Pullman. |
| Kan. C., Ft. Scott & M. | †§7 | Mail | Am. Car & Fdy. |
| Kansas City So.... | †§8 | Chair | Am. Car & Fdy. |
| | †§5 | Bagg. & exp. | Am. Car & Fdy. |
| | †§3 | Mail, bagg. & exp. | Am. Car & Fdy. |
| | 8 | Chair | Am. Car & Fdy. |
| | 5 | Bagg. & exp. | Am. Car & Fdy. |
| Kentwood & East.... | b1 | Passenger | Central Loco. & Car. |
| | b7 | Baggage | Central Loco. & Car. |
| Lake Shore & Mich. So. | †§5 | Coach | Pressed Steel. |
| | †§10 | Postal | Am. Car & Fdy. |
| | †§7 | Coach | Am. Car & Fdy. |
| | †§3 | Dining | Barney & Smith. |
| Lehigh Valley | †§15 | Milk | Standard Steel. |
| | †§3 | Postal | Standard Steel. |
| | †§25 | Baggage | Standard Steel. |
| | †§10 | Pass. & baggage. | Pullman. |
| | †§15 | Baggage & mail. | Standard Steel. |
| | †§30 | Coach | Pullman. |
| | †§20 | Smoking | Pullman. |
| | †§2 | Dining | Pullman. |
| Long Island | †§20 | Motor coach | Am. Car & Fdy. |
| | †§15 | Coach | Am. Car & Fdy. |
| | †§5 | Pass. & baggage. | Am. Car & Fdy. |
| Louisiana & Arkansas... | †§1 | Mail & baggage. | Am. Car & Fdy. |
| | †§2 | Coach | Barney & Smith. |
| Louisville & Nashville... | †§6 | Postal & baggage. | Company shops. |
| | †b2 | Baggage | Company shops. |

| Purchaser. | No. | Kind. | Builder. |
|----------------------------|------|------------------------|-------------------------|
| Louisiana & No. W.... | †§4 | Coach | Company shops. |
| Louisv., Hend. & St. L. | †b12 | Coach | Company shops. |
| Louisiana Ry. & Nav.... | b1 | Mail & baggage. | Am. Car & Fdy. |
| Maine Central | †§2 | Mail, bagg. & exp. | Company shops. |
| | 2 | Chair | Second-hand. |
| | †§8 | Coach | Laconia Car. |
| | †§1 | Mail | Laconia Car. |
| | †§3 | Mail & baggage. | Laconia Car. |
| Maryland & Penna.... | 1 | Coach | Am. Car & Fdy. |
| Michigan Central | †§10 | Postal | Pressed Steel. |
| Midland Valley | b7 | Coach | Am. Car & Fdy. |
| | b2 | Baggage | Am. Car & Fdy. |
| | †§1 | Business | Company shops. |
| | b1 | Baggage | Company shops. |
| Minn., St. P. & S. S. M. | †b§3 | Parlor | Barney & Smith. |
| | †b§2 | Cafe-observ. | Barney & Smith. |
| | †§14 | Coach | Barney & Smith. |
| | 5 | Coach | Am. Car & Fdy. |
| | 4 | Baggage & mail. | Am. Car & Fdy. |
| | †§1 | Dining | Barney & Smith. |
| | †§6 | Sleeping | Barney & Smith. |
| Missouri, Kan. & Texas. | 1 | Mail | Am. Car & Fdy. |
| Missouri Pacific | †§15 | Baggage | Am. Car & Fdy. |
| | †§14 | Mail | Am. Car & Fdy. |
| | †§11 | Chair | Pullman. |
| | †§8 | Coach | Pullman. |
| | †§2 | Combination | Pullman. |
| | †§12 | Mail & baggage. | Am. Car & Fdy. |
| | †§5 | Express | Am. Car & Fdy. |
| | †§1 | Pass., sm. & bag. mo. | McKeen Motor Car. |
| | †§1 | Dining | Am. Car & Fdy. |
| | †§1 | Pass. & bag. motor. | Hall-Scott Mot. Car Co. |
| | b3 | Buffet-parlor | Ga. Car. |
| | 10 | Milk | Company shops. |
| | †§15 | Postal | Am. Car & Fdy. |
| | †§3 | Dining | Barney & Smith. |
| | †§14 | Sleeping | Barney & Smith. |
| | 6 | Baggage & mail. | Cent. Loco. & Car. |
| | 1 | Motor | McKeen Motor Car. |
| | 4 | Baggage & mail. | Am. Car & Fdy. |
| | 3 | Baggage | Am. Car & Fdy. |
| | †§3 | Baggage | Am. Car & Fdy. |
| | †§2 | Pass. & baggage. | Am. Car & Fdy. |
| Oregon Electric.... | †§10 | Coach | Am. Car Co. |
| | †§6 | Motor | Am. Car Co. |
| Oregon Short Line.... | 4 | Pass., bag. & motor. | McKeen Motor Car. |
| Ore.-Wash. Ry. & Nav... | †§2 | Pass., sm. & bag. mot. | McKeen Motor Car. |
| Pennsylvania Railroad.. | †§76 | Coach | Am. Car & Fdy. |
| | †§20 | Baggage | Am. Car & Fdy. |
| | †§41 | Coach | Pressed Steel Car. |
| | †§65 | Combination | Pressed Steel Car. |
| | 50 | Suburban | Company shops. |
| | 9 | Dining | Company shops. |
| | 7 | Mail | Company shops. |
| | †§1 | Private | Pullman. |
| | †§2 | Pass., sm. & bag. mo. | McKeen Motor Car. |
| | †§12 | Coach | Pullman. |
| | †§2 | Combination | Pullman. |
| | †§2 | Dining | Harlan & Hollingsworth. |
| | †§8 | Baggage | Harlan & Hollingsworth. |
| | †§1 | Baggage & mail. | Harlan & Hollingsworth. |
| | †§1 | Baggage | Company shops. |
| Pineville, Warm Springs | †§3 | Motor | McKeen Motor Car. |
| & Portland City.... | †§4 | 1st class | Preston Car. |
| Pt. Arthur & Ft. Wm... | 1 | Combination | Central Loco. & Car. |
| Portland & So. E.... | b1 | Passenger & bagg. | Barney & Smith. |
| Pearson & Son, S.... | †§15 | Coaches | Harlan & Holl. |
| Queen & Crescent | †§6 | Mail | Am. Car & Fdy. |
| | †§1 | Bagg. & mail. | Am. Car & Fdy. |
| | †§5 | Combination | St. Louis Car. |
| | †§1 | Snow sweep. | Preston Car. |
| | †§6 | 1st class | Preston Car. |
| Regina | †§4 | Coach | Am. Car & Fdy. |
| Regina Municipal | 3 | Coach | Company shops. |
| Richmond, Fredericks- | 3 | Sleeping | Company shops. |
| burgh & Potomac.... | 1 | Dining | Company shops. |
| Ried-Newfoundland | †§2 | Bagg. & mail | Pullman. |
| Rutland | †§1 | Postal | Laconia Car. |
| St. Louis & San Fran... | †§12 | Mail | Am. Car & Fdy. |
| | †§2 | Baggage | Am. Car & Fdy. |
| | †§3 | Mail & bagg. | Am. Car & Fdy. |
| | †§15 | Coach | Am. Car & Fdy. |
| | †§10 | Chair | Am. Car & Fdy. |
| | †§5 | Dining | Am. Car & Fdy. |
| | †§3 | Cafe-club | Am. Car & Fdy. |
| | †§1 | Cafe-coach | Am. Car & Fdy. |
| | †§4 | Buffet-club | Pullman. |
| | 11 | Gasoline motor | General Electric. |
| St. Louis, Ken., & S. E. | 1 | Coach | Central Loco. & Car. |
| San Ant. & Ar. Pass... | †§2 | Pass. & mail | Am. Car & Fdy. |
| | †§2 | Pass. & mail | Central Loco. & Car. |
| San Diego, El P. & St. L. | 2 | Coach | Central Loco. & Car. |
| | 1 | Combination | Central Loco. & Car. |
| San Fr., Oakl. & San Jose | 25 | Motor coach | St. Louis Car. |
| Sand Springs Int. | †§2 | Pass. smkg. & bag. | motor |
| Seaboard Air Line | †§10 | Coach | Pullman. |
| | †§3 | Pass. & bagg. | Pullman. |
| | †§6 | Postal | Pullman. |
| | †§3 | Express | Pullman. |
| Southern | †§35 | Coach | Harlan & Holl. |
| | †§10 | Pass. & bagg. | St. Louis Car. |
| | †§20 | Postal | Am. Car & Fdy. |
| | †§4 | Dining | Barney & Smith. |
| Southern Georgia | 1 | Coach | Central Loco. & Car. |
| Spokane, Portl. & Seattle. | †§4 | Bagg. & mail. | Am. Car & Fdy. |
| | †§3 | Dynamo baggage. | Am. Car & Fdy. |

* Indicates all-steel cars.

† Indicates steel underframe cars.

‡ Indicates composite body cars.

§ Indicates composite underframe

cars.

† Indicates gas lighting.

‡ Indicates electric lighting.

a Indicates acetylene lighting.

b. Indicates oil lighting

† Indicates wood and steel under-

frame cars.

| Purchaser. | No. | Kind. | Builder. |
|------------------------|-----|---------------|----------------------|
| Sydney & Louisb..... | 1 | 1st class | Pullman. |
| Texas So. East | 1 | Coach | Am. Car & Fdy. |
| Texas Traction | 2 | Trailer | Am. Car & Fdy. |
| Tol. Peoria & W..... | b4 | Mail & bagg. | Pullman. |
| Toronto & York Rad... | †2 | Express | Preston Car. |
| Tremont & Gulf | †6 | 1st class | Preston Car. |
| United Fruit Co. | 2 | Coach | Central Loco. & Car. |
| | †1 | Observation | Wason Mfg. |
| | †1 | 1st class | Wason Mfg. |
| | †1 | 2nd class | Wason Mfg. |
| | †3 | Pass. & bagg. | Wason Mfg. |
| | †1 | Baggage | Wason Mfg. |
| Wabash | *†3 | Parlor | Am. Car & Fdy. |
| Western Maryland | †15 | Coach | Barney & Smith. |

| Purchaser. | No. | Kind. | Builder. |
|-------------------------|-----|--------------------------|-------------------|
| | ††2 | Combination | Barney & Smith. |
| | ††2 | Baggage | Barney & Smith. |
| | ††4 | Mail & exp. | Barney & Smith. |
| | ††1 | Official | Barney & Smith. |
| Wind. Essex & L. Shore. | †1 | Express | Preston Car. |
| Windsor St. Ry. | †6 | 1st class | Preston Car. |
| Woodstock & Syc. Trac.. | *1 | Pass. smkg. & bag. motor | McKeen Motor Car. |

* Indicates all-steel cars.
† Indicates steel underframe cars.
† Indicates composite body cars.
‡ Indicates composite underframe cars.

‡ Indicates gas lighting.
§ Indicates electric lighting.
a Indicates acetylene lighting.
b. Indicates oil lighting.
† Indicates wood and steel underframe cars.

LOCOMOTIVES ORDERED IN 1911

| Purchaser. | No. | Cylinders. | Total Weight, Engine Only. | Type. | Builder. | Purchaser. | No. | Cylinders. | Total Weight, Engine Only. | Type. | Builder. |
|---------------------------|-------|------------|----------------------------|---------|------------------|----------------------------------|------|------------|----------------------------|----------|------------------|
| Abilene & S..... | 1 | 18x24 | 90,000 | 2-6-0 | Central Lo. & C. | Chicago & North West.. | †15 | 25x28 | 250,500 | 4-6-2 | American |
| Adirondack & St. L..... | §1 | 18x24 | 118,500 | 2-6-0 | Baldwin. | Chicago, Burl. & Quincy. | 10 | 27x30 | 266,500 | 2-8-2 | Baldwin. |
| Akr., Cant. & Youngst. | 3 | 19x26 | 135,000 | 0-6-0 | Lima Loco. | | †25 | | | | Baldwin. |
| | 2 | 21x26 | 159,000 | 0-6-0 | Lima Loco. | | 6 | 20x24 | 122,500 | Switch | Comp. shops. |
| Algoma, C. & Hud. Bay. | †10 | 22½x28 | 194,000 | 2-8-0 | Montreal Loco. | | *§1 | 26&40x32 | 448,000 | 2-8-2 | Baldwin. |
| | 5 | 22x28 | 197,000 | 2-8-0 | Canadian Loco. | Chic. & Wilm. Coal Co.. | 1 | 18x22 | 80,000 | 0-6-0 | Central Loco. |
| | 5 | 22½x28 | 190,000 | 4-6-0 | Canadian Loco. | Chic., Indianapolis & L. | 7 | 22x30 | 209,000 | 2-8-0 | American. |
| Algoma Steel | 2 | 19x24 | 123,000 | 0-6-0 | Montreal Loco. | | 3 | 22x28 | 215,000 | 4-6-2 | American. |
| | 2 | 16x24 | 132,000 | 0-6-0 | Montreal Loco. | | †9 | 27x30 | 276,000 | 2-8-2 | American. |
| Allegheny R. Mining Co. | 20 | 22x28 | 196,000 | 2-8-0 | Baldwin. | Chic., Memphis & Ga... | 1 | 19x24 | 124,000 | 2-8-0 | Baldwin. |
| | 2 | 22x28 | 228,000 | 2-8-2 | Baldwin. | | 1 | 15x24 | 80,000 | 4-4-0 | Baldwin. |
| Am. Smelter Securities.. | 1 | 23x28 | 230,500 | 2-8-2 | Baldwin. | Chic., Milw. & Ga. | §2 | 21x28 | 174,000 | 2-8-0 | Baldwin. |
| Am. Br. Shoe & Fdy. Co. | 1 | 16x24 | 86,000 | 0-4-0 | American. | Chic., Milw. & P. S..... | †15 | 25x28 | 250,000 | 4-6-2 | Comp. shops. |
| Arizona East..... | 2 | 22x30 | 187,000 | 2-8-0 | Baldwin. | | †5 | 24x30 | 217,000 | 2-8-0 | Comp. shops. |
| Arcadia & B..... | 1 | 17x24 | 108,000 | 0-10-0 | Central Loco. | Chic., St. P., Minn. & O. | 20 | 18x24 | 124,000 | 0-6-0 | American |
| Ascens'n Red Cypress Co. | 1 | 12x18 | 60,000 | 0-4-4 | Davenport Loc. | | †6 | 23x26 | 179,000 | 2-8-0 | American |
| Ashbel-Hubbard Co..... | 1 | 11x16 | 40,000 | 2-6-0 | Davenport Loc. | | †2 | 23x28 | 212,000 | 4-6-2 | American |
| A., T. & S. F..... | *†§24 | 24&38x28 | 370,000 | 2-6-6-2 | Baldwin. | | 5 | 18x24 | 130,500 | 0-6-0 | American |
| | 29 | 20x26 | 154,000 | Switch | Baldwin. | | †10 | 23x26 | 179,000 | 2-8-0 | ..... |
| | 23 | 17½&29x28 | 276,000 | 4-6-2 | Baldwin. | City & County Cont. Co. | 1 | | 160,000 | Electric | Westinghouse. |
| | *†5 | 17½&29x28 | 276,000 | 4-6-2 | Baldwin. | C. C. & St. L..... | †30 | 25x30 | 244,000 | 2-8-0 | American. |
| Atlantic Coast Line..... | 20 | 22x30 | 230,400 | 2-8-2 | Baldwin. | Cleveland-Cliffs Iron Co. | 1 | 11x12 | 100,000 | Shay | Lima Loco. |
| | 15 | 22x28 | 220,850 | 4-6-2 | Baldwin. | Col., Newb. & Laur..... | 2 | 19x26 | 132,000 | 4-6-0 | Baldwin. |
| Baker, R., & Shuksan... | 1 | 12x18 | 69,000 | 0-4-0 | Davenport Loc. | Corrigan, McKinney & Co. | 2 | 19x26 | 123,000 | 0-6-0 | American. |
| Baltimore & Ohio..... | †10 | 21x26 | 164,250 | 2-6-0 | Baldwin. | Coudersp. & Pt. Allegh.. | 1 | 17x24 | 104,000 | 4-4-0 | Baldwin. |
| | *†10 | 26&41x32 | 461,000 | 0-8-8-0 | American. | Crystal C. & Uvalde.... | †1 | 18x24 | 122,000 | 2-6-0 | American. |
| | 10 | 24x32 | 271,040 | 4-6-2 | Baldwin. | Cuba R. R. | 5 | 18x24 | 127,000 | 0-10-0 | American. |
| | †30 | 24x32 | 277,190 | 4-6-2 | Baldwin. | Cuban Am. Sugar | 4 | 15x20 | 140,000 | 2-6-0 | Lima Loco. |
| | 140 | 24x32 | 276,050 | 2-8-2 | Baldwin. | Cumb. & Penna. | 3 | 21x26 | 174,500 | 2-8-0 | Comp. shops. |
| | †10 | 24x32 | 282,200 | 2-8-2 | Baldwin. | Czarinkow-Rionda | 2 | 8x14 | 25,000 | 0-6-0 | American. |
| | †10 | 26x32 | 282,200 | 2-8-2 | Baldwin. | Del., Lack. & Western... | 15 | 26x30 | 233,000 | 2-8-0 | American. |
| Bangor & Aroostook.... | 6 | 20x26 | 160,000 | 4-6-0 | American. | | 7 | 20½x26 | 171,000 | 2-6-0 | American. |
| Bentley & Emery..... | 1 | 13½x15 | 160,000 | Shay | Lima Loco. | | 7 | 19x24 | 133,000 | 0-6-0 | American. |
| Bessemer & L. Erie..... | 30 | 22x30 | 205,000 | 2-8-0 | American. | | 6 | 21x26 | 156,000 | 4-4-0 | American. |
| | 2 | 22x32 | 248,700 | 2-8-0 | Baldwin. | Delaware & Hudson..... | 5 | 21x26 | 193,000 | 4-6-0 | American. |
| | 3 | 19x26 | 127,800 | 0-6-0 | Baldwin. | | 5 | 24x30 | 211,000 | 2-8-0 | American. |
| Binghamton & Garf..... | 2 | 21x26 | 155,000 | 0-6-0 | Baldwin. | | *†4 | 26&41x28 | 457,000 | 0-8-8-0 | American. |
| | 10 | | | | H. K. Porter. | | 1 | 23x26 | 199,000 | 4-6-0 | American. |
| | *†2 | 26&41x28 | 454,000 | 0-8-8-0 | American. | Detroit & Tol. Sh. Line.. | 4 | 20x26 | 162,000 | 2-6-0 | American. |
| | *†1 | 26&41x28 | 450,000 | 0-8-8-0 | American. | J. A. Dewar Co..... | 1 | 12x18 | 56,000 | 0-4-0 | Davenport Loc. |
| Black Bayou | 1 | 16x24 | 92,500 | 2-8-0 | Davenport. | Dixie | 1 | | 80,000 | Shay | Lima. |
| Borough Devel. Co..... | 1 | 11x16 | 40,000 | 0-4-0 | Davenport. | Dul. Winnipeg & P..... | †5 | 23x26 | 188,000 | 2-8-0 | American. |
| Boston & Maine | 40 | 22x28 | 233,000 | 4-6-2 | American. | | †5 | 22x26 | 169,500 | 4-6-0 | Baldwin. |
| | 20 | 19x26 | 140,000 | 0-6-0 | American. | | 1 | 18x26 | 116,500 | 4-6-0 | Baldwin. |
| Boston, Rev. B. & L.... | 2 | 14x18 | 91,000 | 0-4-4 | American. | Durh. & So. Car..... | | | | | |
| Braden Copper | 1 | 10x12 | 84,000 | Shay | Lima Loco. | East Br. Top. R. R. & Coal | 1 | 17x24 | 112,000 | 2-8-2 | Baldwin. |
| Bradley Contr. Co..... | 2 | 13x18 | 60,000 | 0-4-0 | Davenport. | E. Tenn. & W. No. Car.. | §1 | 15x22 | 90,000 | 4-6-0 | Baldwin. |
| Brinson | §3 | 18x26 | 130,600 | 4-6-0 | Baldwin. | Edwardsburg Starch Co.. | 1 | 13x18 | 56,000 | 0-4-0 | Montreal. |
| Brompton Pulp & P. Co. | 1 | 14x22 | 50,000 | 0-4-4 | Montreal. | Elkin & Allegh..... | 1 | 20x24 | 146,000 | 2-8-0 | Baldwin. |
| Brooklyn Copper Co.... | 1 | 12x15 | 140,000 | Shay | Lima Loco. | Erie | †20 | 28x32 | 315,000 | 2-8-2 | Baldwin. |
| Buffalo Cr. | 1 | 20x24 | 144,000 | 0-6-0 | American. | | †15 | 28x32 | 315,000 | 2-8-2 | American. |
| Buffalo, Cr. & Gaul.... | 1 | 20x24 | 137,000 | 2-8-0 | Baldwin. | | 5 | 20x26 | 148,500 | 0-6-0 | Company shops. |
| Buffalo, Roch. & P..... | †7 | 26½x30 | 282,000 | 2-8-2 | American. | | 5 | 20x26 | 148,500 | 0-6-0 | Lima Loco. |
| | †3 | 24½x26 | 258,000 | 4-6-2 | American. | | 20 | 20x26 | 148,500 | 0-6-0 | Company shops. |
| Canada Iron Cor..... | 2 | 19x26 | 124,000 | 0-6-0 | Montreal Loco. | Escanaba & L. Sup. | 1 | 19x26 | 137,750 | 4-6-0 | Baldwin. |
| Canadian Northern | 10 | 19x26 | 123,000 | 0-6-0 | Canadian. | Esquimalt & Nanaimo... | 2 | 14x22 | 80,000 | 2-4-2 | Montreal. |
| | †20 | 22x26 | 172,000 | 4-6-0 | Montreal Loco. | Fauquier, E. F. & G. E.. | 2 | 18x24 | 109,000 | 4-6-0 | Montreal. |
| | 10 | 19x36 | 124,400 | 0-6-0 | Montreal Loco. | Fla. East Coast | 15 | 20x26 | 196,000 | 4-6-2 | American. |
| Canadian Pacific | †34 | 21x28 | 198,000 | 4-6-0 | Comp. shops. | | †5 | 22x26 | 203,500 | 4-6-2 | American. |
| | †15 | 21x28 | 198,000 | 4-6-0 | Comp. shops. | Ft. Dodge, Des Moines & Southern | 7 | | 90,000 | Electric | Am. & Gen. Elec. |
| | †2 | 22½x28 | 219,000 | 4-6-2 | Comp. shops. | Frederick R. R. | 2 | | | Electric | Baldwin. |
| | †7 | 22½x28 | 217,000 | 4-6-2 | Comp. shops. | Galv. Har. & San A.... | 6 | 22x28 | 203,000 | 4-6-0 | Baldwin. |
| | †10 | 19x24 | 127,000 | 4-6-0 | Comp. shops. | | 2 | 19x26 | 143,000 | Switch | Baldwin. |
| | †14 | 19x24 | 127,000 | 4-6-0 | Montreal Loco. | Georgia | 6 | 20x24 | 173,000 | 4-6-0 | Baldwin. |
| | †1 | 20x26 | 236,000 | 4-6-4 | Comp. shops. | | 2 | 20x24 | 118,000 | 0-6-0 | Baldwin. |
| | †1 | 18x28 | 200,000 | 0-6-4 | Comp. shops. | Ga. No..... | 2 | 19x24 | 112,000 | 4-6-0 | Central Loco. |
| Cavacchi & Pagano..... | 1 | 18x24 | 109,000 | 4-6-0 | Montreal Loco. | Gideon & No. Is..... | 1 | | 100,000 | 2-6-0 | Baldwin. |
| | 1 | 13x18 | 60,000 | 4-0-0 | Vulcan. | Grand Rapids & Ind... | 3 | 20x24 | 144,100 | 0-6-0 | Company shops. |
| Central of New Jersey.. | †3 | 22x28 | 206,000 | 4-4-2 | P. & R. Ry. | Grand Trunk | *†12 | 21½&32x32 | 209,000 | 2-8-0 | American. |
| | 5 | 21x26 | 147,500 | 0-6-0 | Comp. shops. | | *†10 | 22½&35x32 | 212,000 | 2-8-0 | American. |
| Central Pacific | 6 | 23½x30 | 204,000 | 2-8-2 | Baldwin. | | 10 | 20x26 | 227,000 | 0-6-0 | Lima Loco. |
| | 6 | 22x30 | 187,000 | 2-8-0 | Baldwin. | Grand Trunk Pac. | 15 | 22x28 | 220,000 | 4-6-2 | American. |
| | 6 | 19x26 | 143,000 | Switch | Baldwin. | | 20 | 21x30 | 205,000 | 2-8-0 | American. |
| | *†12 | 26&40x30 | 394,000 | 2-8-8-0 | Baldwin. | | 10 | 20x26 | 160,000 | 0-6-0 | American. |
| | *†12 | 25&38x28 | 320,000 | 2-6-6-0 | Baldwin. | | †25 | 23x30 | 211,200 | 2-8-0 | Canadian Loco. |
| | 20 | 20x26 | 100,000 | 4-4-0 | Baldwin. | Great Northern..... | †20 | 28x32 | 287,000 | 2-8-2 | Baldwin. |
| Cambria & Ind..... | 1 | 23x30 | 261,050 | 2-8-2 | Baldwin. | Green B. & West..... | 29 | 19x26 | 134,000 | 2-6-0 | American. |
| Charl., H. & No..... | 1 | 20x24 | 114,450 | 2-8-0 | Baldwin. | Guinle & Co..... | 1 | 6x12 | 14,000 | 0-4-0 | American. |
| Charl. & W. Car..... | 2 | 19x24 | 113,000 | 0-6-0 | Baldwin. | Gulledge Bros. Lbr. Co. | 1 | 14x20 | 60,000 | 2-6-0 | Davenport. |
| | 4 | 21x28 | 171,000 | 2-8-0 | Baldwin. | Hocking Valley..... | 10 | 23x30 | 237,000 | 2-8-0 | American. |
| Chesapeake & Ohio..... | †1 | 22x28 | 215,000 | 4-6-2 | American. | Houston Bros. | 1 | 18x24 | 90,000 | 0-6-0 | Central Loco. |
| | 7 | 22x28 | 215,000 | 4-6-2 | American. | Hudson Iron Co..... | 1 | 8x12 | 40,000 | Shay | Lima Loco. |
| | †3 | 29x28 | 325,000 | 4-8-2 | American. | Hydraulic Engine Co. of Maine | 6 | 11x16 | 40,000 | 0-4-0 | Davenport Loc. |
| | †1 | 29x28 | 320,000 | 2-8-2 | American. | | 3 | 10x14 | 31,000 | 0-4-0 | Davenport. |
| | 2 | 38½x18 | 330,600 | Shay | American. | | 1 | 10x16 | 37,000 | 0-4-0 | Davenport. |
| | *†24 | 22&35x32 | 400,000 | 2-6-6-2 | American. | | | | | | |
| Chicago & E. Illinois.... | †8 | 26½x28 | 260,000 | 4-6-2 | Baldwin. | | | | | | |
| Chicago & North West.. | †20 | 25x27 | 250,500 | 4-6-2 | American. | | | | | | |
| | 1 | 11x18 | 50,000 | 2-6-0 | American. | | | | | | |
| | †65 | 25x32 | 238,000 | 2-8-0 | American | | | | | | |
| | 15 | 18x24 | 130,500 | 0-6-0 | American | | | | | | |

* Indicates compound.
† Indicates superheater.
‡ Indicates reheater.
§ Indicates feed water heater.

| Purchaser. | No. Cylinders | Total Weight, Engine Only. | Type. | Builder. |
|---------------------------|---------------|----------------------------|----------------|----------------|
| Hydraulic Engine Co. of | | | | |
| Maine | 1 16x24 | 72,000 | 0-4-0 | Davenport. |
| Idaho & Washington N. | 2 22x30 | 200,000 | 2-8-0 | Baldwin. |
| Illinois Central..... | †40 27x30 | 280,000 | 2-8-2 | Baldwin. |
| | †5 25x26 | 239,000 | 4-6-2 | American. |
| | †10 27x30 | 280,000 | 2-8-2 | Baldwin. |
| | †10 25x26 | 239,000 | 4-6-2 | American. |
| | †40 27x30 | 280,000 | 2-8-2 | Baldwin. |
| | †10 25x26 | 239,000 | 4-6-2 | American. |
| | †10 27x30 | 280,000 | 2-8-2 | Baldwin. |
| Ill. Midland Coal Co.. | 1 13x18 | 56,000 | 0-4-0 | American. |
| Illinois No. | 1 22x26 | 145,000 | 0-6-0 | Baldwin. |
| Illinois Terminal..... | †1 20x24 | 150,000 | 2-6-0 | Baldwin. |
| Independent Coal & Coke. | 1 14½x15 | 180,000 | Shay | Lima. |
| Indian Cr. Vy..... | 1 20x24 | 143,900 | 2-8-0 | Baldwin. |
| Inland St. Co..... | 1 17x24 | 94,000 | 0-6-0 | American. |
| Intercolonial | 4 20x26 | 137,000 | 0-6-0 | Canadian Loco. |
| | 3 20x26 | 155,000 | 4-6-0 | Canadian Loco. |
| | 5 21x26 | 198,000 | 4-6-0 | Canadian Loco. |
| International & Gt. N. | 9 20x28 | 174,000 | 0-10-0 | Baldwin. |
| Island Creek..... | 1 21x28 | 173,000 | 0-8-0 | American. |
| Jacksonville Term.... | 1 19x28 | 119,000 | 0-6-0 | Baldwin. |
| Kanawha & Michigan... | 8 23x30 | 237,000 | 2-8-0 | American. |
| | 2 20x26 | 130,000 | 0-6-0 | American. |
| Kanawha Gl. J. & East. | 1 ..... | ..... | 2-8-2 | Baldwin. |
| Kansas City & Mem.. | 1 18x26 | 134,000 | 4-6-0 | American. |
| Kansas City Southern.. | *12 22½x35x32 | 353,000 | 2-8-8-0 | American. |
| | *8 24x28 | 250,000 | 4-6-2 | American. |
| Kelley Isl. Lime & Tran. | | | | |
| Co. | 2 8x12 | 40,000 | Shay | Lima Loco. |
| Kentucky & Ind. Term. | 2 21x26 | 159,000 | 0-6-0 | Baldwin. |
| Kentucky & Tennessee. | §8 20x24 | 110,000 | 2-6-2 | Baldwin. |
| Keweenaw, Gr. Bay & W. | 1 20x26 | 135,000 | 2-6-0 | American. |
| L. Super. Term. & Tr. Co. | *1 24x37x32 | 340,000 | 0-6-6-0 | Baldwin. |
| Lake Term. Co..... | 4 20x28 | 181,500 | 2-8-2 | Baldwin. |
| Lar. Hahns P. & Pac... | 1 18x26 | 128,450 | 4-6-0 | Baldwin. |
| Laurinb. & So..... | 2 23½x26 | 228,000 | 2-8-0 | Baldwin. |
| Lehigh & New Eng..... | 2 19x26 | 145,000 | 2-8-0 | Baldwin. |
| | 4 21x26 | 178,200 | 4-6-0 | American. |
| Long Island | 2 19x26 | 134,000 | 0-6-0 | Baldwin. |
| Louisiana & Arkansas... | 2 18x24 | 124,500 | 0-8-0 | Baldwin. |
| Louisiana | 1 16x24 | 108,000 | 2-6-2 | Baldwin. |
| Louisiana & Northwest.. | 3 18x26 | 130,500 | 4-6-0 | Baldwin. |
| Louisiana & Pine Bluff.. | §1 17x24 | 103,000 | 2-6-0 | Baldwin. |
| Louisville & Nashville... | 25 23x30 | 220,000 | 2-8-0 | Comp. shops. |
| | †8 23½x29 | 222,000 | 2-8-0 | Comp. shops. |
| | †5 21½x28 | 210,000 | 4-6-2 | Comp. shops. |
| | 1 20x26 | 100,000 | 0-6-0 | Baldwin. |
| Louisv. Hend. & St. L.. | 1 13x18 | 56,000 | 0-4-0 | Montreal Loco. |
| Lyall & Sons, P..... | 2 14½x15 | 180,000 | Shay | Lima Loco. |
| McCloud River | 3 19x26 | 130,000 | 2-6-0 | Montreal Loco. |
| MacDonnel & O'Brien... | 1 12x16 | 47,000 | 2-6-2 | Baldwin. |
| Mapimi Ry. | 1 21x24 | 147,000 | 2-8-0 | American. |
| Marion & Rye V..... | *2 18½x29x26 | 366,000 | 2-8-8-0 | American. |
| Mexico Northwestern.... | 6 19x26 | 148,000 | 2-6-2 | American. |
| | 1 18x24 | 113,000 | 4-4-0 | Baldwin. |
| Midl. Pennsylvania | 3 11x16 | 39,000 | 0-4-0 | Montreal Loco. |
| Miller & Son, R..... | 9 19x26 | 141,200 | 0-6-0 | Baldwin. |
| Mo. Kan. & Texas..... | †7 24x28 | 235,000 | 4-6-2 | American. |
| | 6 20x26 | 165,000 | 2-8-0 | Baldwin. |
| Mo. Okla. & Gulf..... | †50 27x30 | 275,000 | 2-8-2 | American. |
| Missouri Pacific | †15 26x26 | 252,000 | 4-6-2 | American. |
| | *1 23½x36x32 | ..... | 2-8-8-0 | Baldwin. |
| Mobile & Ohio..... | †4 27x30 | 272,940 | 2-8-2 | Baldwin. |
| | 8 20x26 | 145,000 | 0-6-0 | Lima Loco. |
| Morgan's La. & T..... | 2 19x26 | 143,000 | 0-6-0 | Baldwin. |
| Mt. Hood & Power Co.. | 2 10x16 | 37,000 | 0-4-0 | Baldwin. |
| Nashv. Chatt. & St. L.. | 3 23x28 | 253,000 | 4-6-2 | Baldwin. |
| Nev., Cal., Oregon..... | †2 16x20 | 88,000 | 2-6-0 | Baldwin. |
| Nevada Copper Belt.... | 1 18x24 | 130,000 | 2-8-0 | Lima Loco. |
| New Orleans & N. E.... | 2 21x28 | 180,000 | 4-6-0 | Baldwin. |
| | 1 20x24 | 112,000 | 0-6-0 | Baldwin. |
| | 2 21x26 | 135,500 | 0-6-0 | Baldwin. |
| | 2 20x26 | 167,000 | 4-6-0 | American. |
| New Orleans, Gt. Nor... | 86 | 100,000 | Montreal Loco. | |
| New Bruns. Coal & Ry.. | 1 18x24 | 100,000 | 4-4-0 | Baldwin. |
| N. Y. & Penna..... | †30 26x26 | 266,000 | 4-6-2 | American. |
| N. Y. Cent. & H. R.... | †30 26x26 | 269,000 | 4-6-2 | Baldwin. |
| | †20 23½x26 | 269,000 | 4-6-2 | Baldwin. |
| N. Y. Chic. & St. L... | 6 19x28 | 172,000 | 2-8-0 | American. |
| | 9 19x24 | 145,000 | 4-6-0 | American. |
| N. Y. New Hav. & H.... | 15 | 160,000 | Electric | Westinghouse. |
| | 12 | 232,000 | Electric | Westinghouse. |
| | 3 | 280,000 | Electric | Westinghouse. |
| N. Y. Ont. & Western.. | 4 20x26 | 178,000 | 4-6-0 | American. |
| | 4 20½x26 | 150,000 | 0-6-0 | American. |
| | 12 21x32 | 201,500 | 4-6-0 | American. |
| Niequero Sugar Co..... | 1 12x18 | 85,000 | 0-6-0 | Lima. |
| Norfolk Southern | 5 20x28 | 165,500 | 4-6-0 | Baldwin. |
| Norfolk & Western..... | †6 24x30 | 262,000 | 4-8-0 | Comp. shops. |
| | †5 22½x28 | 247,000 | 4-6-2 | Comp. shops. |
| Nova Scotia S. & C. Co. | 1 19x26 | 124,000 | 0-6-0 | Montreal Loco. |
| O'Brien, McD. & O'G... | 1 19x26 | 130,000 | 2-6-0 | Montreal Loco. |
| | 3 18x24 | 108,000 | 4-6-0 | Montreal Loco. |
| O'Brien, Fowler & McD. | 7 19x26 | 130,000 | 2-6-0 | Montreal Loco. |
| Oregon & California.... | 10 23½x30 | 262,000 | 2-8-2 | Baldwin. |
| | 2 19x26 | 143,000 | 0-6-0 | Baldwin. |
| Oregon Electric | 4 | 120,000 | Electric | Am. & Gen. El. |
| | 2 | 100,000 | Electric | Am. & Gen. El. |
| Penna. Lines West..... | 1 19x26 | 139,000 | 0-6-0 | American. |
| Pennsylvania | 3 | ..... | 0-8-0 | Baldwin. |
| | †1 27x28 | ..... | 4-6-2 | American. |
| | †1 27x28 | ..... | 2-8-8-2-s | American. |
| | 20 | ..... | Electric | Comp. shops. |
| | 77 | ..... | ..... | Comp. shops. |
| | 15 | ..... | 4-6-2 | Comp. shops. |
| | 10 | ..... | 2-8-2 | Comp. shops. |
| | 10 | ..... | 0-6-0 | Comp. shops. |
| Pennsylvania So. | 1 20x26 | 162,000 | 2-8-0 | American. |
| Pere Marquette | 10 22x30 | 215,000 | 2-8-0 | American. |
| | †25 25x30 | 229,000 | 2-8-0 | American. |
| | 10 20x26 | 136,000 | 0-6-0 | American. |
| | †5 22x28 | 215,000 | 4-6-2 | American. |

| Purchaser. | No. Cylinders. | Total Weight, Engine Only. | Type. | Builder. |
|---------------------------|----------------|----------------------------|----------|----------------|
| Poinsett Lbr. & Mfg.... | 1 11x16 | 46,000 | 0-4-4 | Davenport Loc. |
| Portland S. E. Ry..... | 1 11x16 | 44,000 | 0-4-2 | Davenport. |
| Portland Terminal | 4 | 147,000 | 0-6-0 | American. |
| North & South Car..... | 2 18x26 | 128,450 | 4-6-0 | Baldwin. |
| Oregon Short Line..... | 15 23½x30 | 262,000 | 2-8-2 | Baldwin. |
| Ore.-Wash. R.R. & Nav.. | 40 23½x30 | 262,000 | 2-8-0 | Baldwin. |
| | 10 19x26 | 143,000 | 0-6-0 | Baldwin. |
| | 2 25x28 | 170,000 | 4-6-2 | Baldwin. |
| | 1 16x24 | 98,000 | 4-6-0 | Baldwin. |
| Paris & Mt. P. L..... | 5 21x28 | 161,000 | 0-6-0 | American. |
| Peoria & Pekin Union... | 1 17x24 | 108,000 | 4-6-0 | Central Loco. |
| Northwestern of So. Car. | 10 20x24 | 164,000 | 4-4-0 | Comp. shops. |
| Philadelphia & Reading.. | 5 22x24 | 189,000 | 4-6-0 | Comp. shops. |
| | †1 19x24 | 210,000 | 4-6-0 | Comp. shops. |
| | †1 22x26 | 208,000 | 4-6-0 | Comp. shops. |
| | †1 19x24 | 208,000 | 4-4-2 | Comp. shops. |
| | †2 22x26 | 204,000 | 4-4-2 | Comp. shops. |
| | †3 20½x26 | 191,000 | 4-4-2 | Comp. shops. |
| | †5 20x28 | 150,000 | 0-6-0 | Comp. shops. |
| | †5 18x24 | 106,000 | 0-4-0 | Comp. shops. |
| Pittsburg & Shawmut... | 20 22x28 | 196,000 | 2-8-0 | Baldwin. |
| | 2 22x28 | 226,000 | 2-8-2 | Baldwin. |
| Pittsb. Al. & McK. Rks.. | 2 16x24 | 100,000 | 0-4-0 | H. K. Porter. |
| | 3 18x24 | 135,000 | 0-6-0 | H. K. Porter. |
| | 2 17x24 | 100,000 | 0-6-0 | Baldwin. |
| Porter Bros. | 1 | 70,000 | Electric | Westinghouse. |
| Portl. Gray & Lewiston. | 2 19x24 | 120,000 | 0-6-0 | Baldwin. |
| Public Belt | 1 19x26 | 122,000 | 0-6-0 | Baldwin. |
| Quanahe Acme & P..... | 2 20x26 | 141,000 | 2-6-0 | Canadian Loco. |
| Quebec Central | 5 22x28 | 218,000 | 4-6-2 | Baldwin. |
| Queen & Crescent..... | †5 24x28 | 224,300 | 4-6-2 | American. |
| | 10 22x30 | 204,350 | 2-8-0 | Baldwin. |
| | †25 27x30 | 269,000 | 2-8-2 | Baldwin. |
| | 1 20x24 | 144,000 | 2-8-0 | Baldwin. |
| Raleigh & S. W..... | 2 20x26 | 145,075 | 0-6-0 | Baldwin. |
| Richm., Frederickb. & P. | 4 22x28 | 235,000 | 4-6-2 | American. |
| Ried-Newfoundland | 8 | ..... | ..... | Comp. shops. |
| Roaring Fork | 1 21x26 | 150,000 | 2-8-0 | Baldwin. |
| Rockingham | 1 19x26 | 149,900 | 4-6-0 | Baldwin. |
| Rutland | 2 22x30 | 213,000 | 2-8-0 | American. |
| St. Louis & San Fran... | †12 20½x26 | 154,000 | 0-6-0 | Baldwin. |
| | 20 26x28 | 258,000 | 4-6-2 | American. |
| St. L. Natl. Stock Yards. | 2 19x24 | 121,000 | 0-6-0 | American. |
| Salt Lake & Ogden..... | 1 | 60,000 | Electric | McGuire. |
| San Antonio & Ar. P... | 3 19x26 | 150,000 | 2-6-0 | Baldwin. |
| | 1 19x26 | 150,000 | 2-6-0 | Lima Loco. |
| San Diego & Ar..... | 1 20x24 | 137,000 | 2-8-0 | Baldwin. |
| San Diego El P. & St. L. | 2 17x24 | 108,000 | 4-6-0 | Central Loco. |
| San Ped. Los A. & S. L. | 6 25x28 | 265,400 | 4-6-2 | American. |
| San Rafael & Atl..... | 1 17x20 | 99,000 | 4-6-0 | American. |
| Seaboard Air Line..... | 9 23x40 | 212,000 | 2-8-0 | Baldwin. |
| | †1 25x30 | 214,700 | 2-8-0 | Baldwin. |
| | 5 12x28 | 144,280 | 0-6-0 | Baldwin. |
| | 9 22x28 | 212,000 | 4-6-2 | American. |
| | †1 23x28 | 214,700 | 4-6-2 | American. |
| Sewell Vy. | 1 18x24 | 207,000 | 2-6-0 | Lima Loco. |
| Schoenhofen Br. Co.... | 1 16x24 | 98,000 | 0-4-0 | Davenport Loc. |
| Shelby County | 1 16x24 | 85,000 | 4-4-0 | Davenport |
| Sioux City Terminal.... | 1 19x24 | 114,000 | 4-6-0 | American. |
| Solvay Process | 1 19x24 | 122,000 | 0-6-0 | American. |
| So. Dakota Cent..... | 3 19x24 | 94,000 | 2-6-0 | American. |
| South. Georgia | 1 18x26 | 128,450 | 4-6-0 | Baldwin. |
| Southern | †33 27x30 | 269,000 | 2-8-2 | Baldwin. |
| | 13 22x28 | 224,000 | 4-6-2 | American. |
| | †2 24x28 | 224,000 | 4-6-2 | American. |
| | 15 20x26 | 145,000 | 0-6-0 | Lima Loco. |
| So. Manchester | 1 17x24 | 150,300 | 2-2-4 | Baldwin. |
| Southern Pacific | 3 20x26 | 146,000 | 4-4-0 | Baldwin. |
| | 6 19x26 | 143,000 | 0-6-0 | Baldwin. |
| Spokane & Inl. Emp.... | 1 | 100,000 | Electric | West. & Bald. |
| Spokane, Port. & Seattle. | †2 22x26 | 160,000 | 4-6-0 | Baldwin. |
| Steel Corp. of Canada.. | 1 17x24 | 88,000 | 0-4-0 | American. |
| Sydney & Louisb..... | 1 19x26 | 129,000 | 2-6-0 | Montreal Loco. |
| | 1 21x26 | 178,000 | 2-8-0 | Montreal. |
| Temiskaming & N. Ont.. | †4 23x40 | 206,000 | 2-8-0 | Canadian Loco. |
| Tenn. Coal, Iron & R.R. | 3 | 36,000 | Electric | General Elec. |
| Texas & N. Orleans.... | 2 19x26 | 143,000 | 0-6-0 | Baldwin. |
| Texas City Tr. Co..... | 1 17x24 | 94,000 | 2-6-0 | American. |
| | 2 17x24 | 100,000 | 2-8-0 | Baldwin. |
| | 1 18x26 | 134,000 | 4-6-0 | Baldwin. |
| Texas So. East..... | 1 16x24 | 100,000 | 2-8-0 | Baldwin. |
| Thornton & Alex..... | 1 11x12 | 100,000 | Shay | Lima Loco. |
| Tompkins Cove Stove Co. | †2 23x28 | 203,000 | 2-8-0 | American. |
| Toronto, Hamilt. & Buf. | 1 19x22 | 146,000 | 2-8-2 | Baldwin. |
| Uintah Ry..... | 30 23½x30 | 262,000 | 2-8-2 | Baldwin. |
| Union Pacific | 10 26x28 | 210,000 | 2-8-2 | Baldwin. |
| | 10 19x26 | 143,000 | 0-6-0 | Baldwin. |
| | 1 19x24 | 120,000 | 0-6-0 | Baldwin. |
| United Fruit Co..... | 1 10x14 | ..... | ..... | H. K. Porter. |
| Vandalia | †4 24x26 | 256,000 | 4-6-2 | American. |
| | †4 22x24 | 169,050 | 0-6-0 | Company shops. |
| | 10 24x28 | 233,766 | 2-8-0 | Company shops. |
| | 4 | 70,000 | 2-8-0 | Baldwin. |
| Vera Cruz | †5 27x30 | 269,000 | 2-8-2 | Baldwin. |
| Virgina & S. W..... | 2 27x30 | 269,000 | 2-8-2 | Baldwin. |
| Wabash | 15 25x30 | 264,000 | 2-8-2 | American. |
| | 10 24x36 | 241,000 | 4-6-2 | American. |
| Wabash, Chi. & W..... | 1 19x26 | 170,000 | 2-6-0 | Baldwin. |
| | 1 17x24 | 100,000 | 4-4-0 | Baldwin. |
| Western Maryland | 30 24x30 | 237,100 | 2-8-0 | American. |
| | 5 22x28 | 188,800 | 4-6-2 | Baldwin. |
| Wichita Falls | *5 23½x35x32 | 354,000 | Mallet | Baldwin. |
| | 2 18x26 | 124,000 | 4-6-0 | Baldwin. |
| | 2 20x26 | 148,000 | 2-8-0 | Baldwin. |
| Woodstock & Thornt. | | | | |
| Gore Ry. | 1 11x12 | 100,000 | Shay | Lima Loco. |
| Wrightsv. & Tennille... | 1 18x26 | 128,500 | 4-6-0 | Baldwin. |

CHANGES IN OWNERSHIP AND CONTROL.

If the Goulds have definitely lost control of the Wabash Railroad, and if such control is now in the hands of the bankers, who, it is supposed, have undertaken to finance the reorganization of the company, this change in control deserves to rank as the most important of any during the year. It can hardly be mentioned, however, as anything more than a possibility; it remains to be seen in the plans of reorganization how large a voice the Goulds still have in the management of the property.

The merger of the various lines going to make up the New York Central system is, of course, not a change in ownership or control, except insofar as the New York Central buys from former owners stocks of companies such as the New York & Harlem, which roads it has heretofore leased but the stock of which it has not owned. The acquisition, however, of a half interest in the operation of the Boston & Albany by the New York, New Haven & Hartford, and the assumption by the New Haven of half of the B. & A. deficit, all of which has been borne heretofore by the New York Central & Hudson River, is an important change in control of the road. The Boston & Albany had been operated by the New York Central & Hudson River. It now has a separate management, operating it from Boston in the interests of both the New Haven and the New York Central.

The New Haven also bought from the New York Central & Hudson River the majority stock of the Rutland Railroad. The Rutland had, a number of years ago, been sold to the New York Central & Hudson River by a member of the Vanderbilt family, and has been operated at a loss. The New York Central has also had trouble in the courts with the minority holders of the preferred stock, dividends on which are cumulative. The New Haven wanted the Rutland for an entrance into Montreal and for a weapon in its fight against the Grand Trunk's invasion of New England. The New York, New Haven & Hartford sold to the New York Central & Hudson River its controlling stock of the New York, Ontario & Western. Thus in 1911 there were very important shifts in the relations of the New England roads.

The formation during the year of the International & Great Northern Holding Company, with Frank Gould as president, to hold the securities of the International & Great Northern, presumably does not mean any change in control of this property.

The merging of the Minneapolis & St. Louis and the Iowa Central is not exactly a change in either ownership or control, the Hawley interests having owned both roads previously, but it does show a bringing together of the interests associated with Newman Erb and the Hawley interests, and these interests presumably have some plans for a further extension and possibly for taking over other roads.

The two important controlled companies of the St. Louis & San Francisco—the Evansville & Terre Haute and the Chicago & Eastern Illinois—were merged during the year, but the relation of the new company to the St. Louis & San Francisco remains the same as that of the Chicago & Eastern Illinois.

The Cincinnati, Hamilton & Dayton, which had before the beginning of the present calendar year been taken by the Baltimore & Ohio, sold its 110,000 shares of common stock (a controlling interest) of the Pere Marquette to J. P. Morgan & Company, and there have been frequent rumors of a resale by the bankers, but nothing definite has been announced as yet.

Another important development which is taking place and which has been effected by changes in ownership and control this year is the expansion of the Norfolk Southern. This company during the past year has bought the Raleigh & Southport, running from Raleigh, N. C., to Fayetteville, 64 miles; the Durham & Charlotte, running from Troy to Colon, 50 miles, and the Aberdeen & Ashboro, running from Aberdeen to Ashboro, 57 miles.

The principal changes that have taken place and which are given in the following list, are not all actual changes of control; some of them are simply changes of names of railways.

The Georgia & Florida bought the Savannah, Augusta & Northern and the Savannah & Statesboro.

The name of the Algoma Central & Hudson Bay was changed to the Algoma Eastern.

The Asheville & East Tennessee was bought by John H. Carter.

The line from Needles, Cal., to Majave, which has been heretofore owned by the Southern Pacific but leased to the Atchison, Topeka & Santa Fe, was bought by the Santa Fe. This line forms part of the Santa Fe's main transcontinental line.

The Oregon & Eureka, which was formerly owned by the Hammond Lumber Company, was taken over by the Atchison, Topeka & Santa Fe. The road runs from Eureka, Cal., to Trinidad, 39 miles.

The Baltimore & Ohio bought the Big Level & Kinzua, which is less than a mile long.

The Boston & Maine bought from the Sortwell Estate the Montpelier & Wells River, the Barre Bridge Railroad and the Barre Railroad. The B. & M. also bought outright the Worcester, Nashua & Rochester, which it had leased since 1886.

The Maine Central bought the Somerset & Washington County and the Seabacoock & Moose Head.

The name of the Union Springs & Northern was changed to the Birmingham & Southeastern.

The Bruce Mines & Algoma, a 17-mile road, was bought by G. P. McCallum and H. Appleton, both of Sault Ste. Marie, Mich. The Canadian Pacific leased the Quebec Central, guaranteeing interest on the income bonds and debenture stock. The Quebec Central runs from Levis, opposite Quebec, to Sherbrooke, 143 miles. The Canadian Pacific bought the Saint Maurice Valley, 84 miles, and the New Brunswick & Southern, 7 miles.

It was said that the Central Railway of Canada bought the Carrollton & Greenville.

The Chicago Great Western took over the property and franchises of the De Kalb & Great Western, a subsidiary.

The Chicago, Milwaukee & St. Paul and the Chicago & North Western bought from the Lake Shore & Michigan Southern and the Michigan Central \$2,450,000 stock of the Indiana Harbor Belt. The St. Paul also bought the controlling stock of the Duluth, St. Cloud, Glencove & Mankato, which runs from Albert Lea, Minn., to St. Clair, 39 miles.

The Chicago, Rock Island & Pacific bought the 24 miles of track of the Little Rock, Hot Springs & Western from Little Rock, Ark., to Benton. This track had heretofore been leased by the Rock Island. The Rock Island also bought the St. Paul & Des Moines, and changed the name to the St. Paul & Kansas City Short Line. The Rock Island also, it is said, bought the Dardanelle, Ola & Southern, and changed its name to the Rock Island & Dardanelle.

The Cincinnati, Georgetown & Portsmouth and the High River & Columbus have been consolidated, making a total of 72 miles.

The Cleveland, Akron & Cincinnati was the new name of a company which took over the Cleveland, Akron & Columbus and the Cincinnati & Muskegon Valley. Both of these roads were Pennsylvania subsidiaries operated independently.

The Midland Terminal, a subsidiary of the Colorado Short Line, has leased the Cripple Creek Short Line.

The Corvallis & Alsea River was merged with the Portland, Eugene & Eastern.

The Delaware, Lackawanna & Western leased the Syracuse, Birmingham & New York, the majority of whose stock is owned by the D. L. & W., but which had been operated independently heretofore.

The Illinois Central, which had previously controlled the Indianapolis Southern, bought this property at a receivership's sale.

The Canadian government bought 13 railways as branch lines of the Intercolonial. These railways are the Valery property of the Arcadian Coal Company, the Quebec Oriental Railway, the Hampton & St. Martin's, the Albert Railway, the Moncton & Buchtouche, the Carequet & Gulf Shore Railway, the York &

Carleton, the International, the Temiscouata, the New Brunswick & Prince Edward Island, the Elgin & Havelock, and the Kent Northern.

The Kansas City & Memphis took over the operation of the Arkansas, Oklahoma & Western and the Monte Ne.

The Louisville & Nashville bought the Athens & Tellico, 24 miles.

The Sandy River & Rangeley Lakes, a subsidiary of the Maine Central, bought the narrow gage Eustis Railroad, 16 miles.

The Maxton, Alma & Southbound took over in May the operation of the Alma Railroad.

The Missouri, Kansas & Texas bought the Wichita Falls & Northwestern and the Wichita Falls & Southern. The M. K. & T. also bought control of the Denison, Bonham & New Orleans.

The Missouri Pacific, which had been operating the Booneville, St. Louis & Southern under a 99-year lease, bought the property. The Munising Marquette & Southeastern took over the operation of the Marquette & Southeastern and the Munising Railway. Heretofore the two roads were operated jointly but had separate corporate existences.

The New York, New Haven & Hartford, through its subsidiary the Rhode Island Company, bought the Narragansett Pier Railroad.

The Oregon Short Line took over the Yellowstone Railroad, 70 miles; the St. Anthony Railway, 53 miles; the Salmon River Railroad, 86 miles; the Wyoming Western, 23 miles; the Minidoka & Southwestern, 74 miles; the Boise City Railway & Terminal, 8 miles.

The Pennsylvania Railroad bought the Ridgeway & Clearfield Railway. The Pennsylvania also bought during the year nearly all of the minority stock of the Cleveland, Akron & Columbus. The Pennsylvania also made arrangements during the year for the renewal of the lease of the Northern Central.

The New York Central & Hudson River bought the Pittsburgh, Binghamton & Eastern under foreclosure sale.

The Portland Terminal Company was formed to take over all of the terminal facilities at Portland, Me., of the Boston & Maine, the Maine Central and the Portland Union Railway Station Company.

The St. Louis & San Francisco made arrangements with the Quana, Acme & Pacific for closer operating relations, but did not take over the actual operation of the property. The St. L. & S. F. also made arrangements with the New Orleans, Mobile & Chicago, by which the Frisco has much closer traffic relations and probably a controlling voice in the management. The Frisco bought outright the Pascagoula Northern, 42 miles. The Frisco leased the Louisiana Southern, running from New Orleans south to Belair, 30 miles.

The St. Louis, Iron Mountain & Southern bought, from the independent company which built it, the Cairo & Thebes, 25 miles.

The Sierra & Mohawk has taken over the Sierra Valleys Railway.

The Spokane, Portland & Seattle took over the operation of the Astoria & Columbia River.

The Tennessee, Alabama & Georgia took over the Chattanooga & Atlanta, the Chattanooga Southern and the Gadsden & Birmingham.

RAILWAY SECURITIES ISSUED IN 1911 AND DIVIDEND CHANGES DURING THE YEAR.

Two things are at once noticeable about the table that we publish herewith showing the railways which have issued and sold, or made arrangements for the sale of, new securities in the calendar year 1911. In the first place, the table is very much longer than the corresponding one for 1910; in the second place, a very large proportion of the securities issued were presumably to pay for additions and betterments, since they were not for refunding purposes.

The fact that the list is a long one shows that smaller or weaker roads were better able last year to sell their securities

| Name of company. | Kind of security issued. | Amount sold. | Amount of refunding covered. | Month in which sold. |
|--|---|--------------|------------------------------|----------------------|
| Algoma Eastern | 5 per cent. 1st mtge. bonds, 1911-1961 | \$2,568,000 | None | August |
| Ann Arbor Co. | Stock | 7,250,000 | None | January |
| Ann Arbor Railroad | First lien 5 per cent. equipment notes, Series B | 600,000 | None | January |
| Ann Arbor Railroad | 2-year 5 per cent. notes | 600,000 | None | April |
| Arizona & New Mexico | Stock | 800,000 | None | February |
| Atchison, Topeka & Santa Fe | Preferred stock | 10,800,000 | None | November |
| Atlanta, Birmingham & Southern | Receiver's 1-year certificates | 3,250,000 | \$3,250,000 | June |
| Atlantic, Waycross & Northern | Bonds | 4,800,000 | None | December |
| Atlantic Coast Line | Series B 4½ per cent. equipment trust bonds | 2,500,000 | None | May |
| Atlantic Coast Line | Unified 4 per cent. bonds, 1909-1959 | 3,000,000 | None | February |
| Baltimore & Ohio | Secured 4½ per cent. notes of 1910-1913 | 10,000,000 | None | April |
| Belt Railroad & Stock Yards (Indianapolis) | 1st refunding mtge. 4 per cent. bonds of 1909-1939 | 1,000,000 | \$1,000,000 | June |
| Birmingham & Southeastern | 1st mtge. 6 per cent. bonds, 1911-1961 | 3,000,000 | None | June |
| Boonville, St. L. & So. | 1st mtge. 5 per cent. bonds, 1911-1951 | 500,000 | \$400,000 | July |
| Boston & Maine | 1-year 4 per cent. notes | 5,000,000 | None | June |
| Boston R. R. Holding Co. | 4 per cent. preferred stock | 7,042,400 | \$6,334,500 | February |
| Boston Terminal Co. | 3½ per cent. bonds of 1897-1947 | 500,000 | None | October |
| Buffalo & Susquehanna | 5 per cent. receiver's certificates, 1911-1912 | 500,000 | \$511,000 | July |
| Buffalo Creek | 1st refunding mtge. 5 per cent. bonds of 1911-1961 | 2,021,000 | 1,000,000 | March |
| Canadian Northern | 3½ per cent. 50-year guaranteed debenture bonds | 35,000,000 | None | December |
| Canadian Northern | Guaranteed 1st mtge. debenture stock—3½ per cent. | 1,794,440 | None | March |
| Canadian Northern (Canadian Northern Alberta) | 1st mtge. debenture stock—3½ per cent. | 3,236,300 | None | March |
| Canadian Northern | Equipment mtge. 4½ per cent. bonds, Series A 1 | 3,500,000 | None | April |
| Canadian Pacific | Consolidated 4 per cent. debenture stock | 6,161,000 | None | June |
| Canadian Pacific | Common stock | 18,000,000 | None | December |
| Cent. New England | 50-year 5 per cent. mtge. bonds | 12,317,000 | \$12,200,000 | January |
| Chesapeake & Ohio | Secured 4½ per cent. notes | 16,000,000 | None | April |
| Chicago & E. Illinois | 4 per cent. refund. and imp. mtge. bonds, 1905-1955 | 864,000 | None | September |
| Chicago & E. Illinois | Preferred stock | 5,000,000 | None | July |
| Chicago & North Western | General mtge. 4 per cent. bonds | 7,500,000 | None | May |
| Chicago & Western Indiana | General lien 4 per cent. bonds | 1,800,000 | None | December |
| Chicago, Burlington & Quincy | General mtge. 4 per cent. bonds | 8,000,000 | None | February |
| Chi. Hts. Term. Transfer | Mtge. 6 per cent. bonds of 1911-1913 | 1,000,000 | None | February |
| Chicago, Indianapolis & Louisville | Refund. mtge. 4 per cent. bonds, 1897-1947, Series C | 2,300,000 | \$2,300,000 | April |
| Chi., Mil. & St. Paul (Chi., Mil. & Puget Sound) | 1st mtge. guar. 4 per cent. bonds, 1909-1949 | 25,000,000 | None | May |
| Chicago, Milwaukee & Puget Sound | 1st mtge. 4 per cent. bonds of 1909-1949 | 25,000,000 | None | May |
| Chicago, Rock Island & Pacific | 1st and refunding 4 per cent. bonds of 1904-1934 | 1,494,000 | \$1,494,000 | April |
| Chicago, Rock Island & Pacific | St. Paul & Kansas City Short Line 1st mtge 4½ per cent. bonds of 1911-1941 | 1,000,000 | None | March |
| Chicago, Rock Island & Pacific | Rock Island Improvement Co. 4½ per cent. Series B guaranteed equipment trust certificates | \$2,240,000 | None | October |
| Chicago, Rock Island & Pacific | Rock Island Improvement Co. 4½ per cent. guaranteed equipment trust certificate s. | 1,575,000 | None | October |
| Chicago, St. Paul, Minneapolis & Omaha | Superior Short Line 1st mtge. 5 per cent., 1895-1930 | 1,500,000 | None | April |
| Cincinnati, New Orleans & Texas Pacific | 10-year equip. trust 4½ per cent. certificates, Series C | 1,000,000 | None | April |
| Cincinnati, New Orleans & Texas Pacific | City of Cincinnati 3½ per cent. bonds | 500,000 | None | May |
| Cleveland & Pittsburgh | Stock | 10,000,000 | None | June |
| Cleveland & Pittsburgh | Stock | 1,073,950 | None | December |
| Cleveland, Cincinnati, Chicago & St. Louis | 20-year 4½ per cent. debentures | 10,000,000 | \$5,000,000 | June |
| Cleveland Short Line | Stock | 3,625,000 | None | April |

| Name of company. | Kind of security issued. | Amount sold. | Amount of refund- ing covered. | Month in which sold. |
|--|--|--------------------------------------|-----------------------------------|-------------------------|
| Colorado & Southern..... | Refunding and extension 4½ per cent. bonds..... | \$1,400,000 | None | January |
| Concord & Montreal..... | Stock..... | 400,000 | None | October |
| Delaware & Hudson..... | 1st and refund mtge. 4 per cent. bonds of 1908-1943.. | 7,000,000 | None | Jan. and Feb. |
| Delaware, Lackawanna & Western..... | Oswego & Syracuse bonds..... | 438,000 | \$438,000 | November |
| Detroit, Toledo & Ironton..... | Receiver's certificates..... | 250,000 | None | Feb. and Mar. |
| Detroit, Toledo & Ironton..... | Receiver's certificates..... | 780,780 | None | June |
| Erie..... | Equipment trust 4½ per cent. notes, 1911..... | 4,600,000 | None | July |
| Erie..... | Collateral 6 per cent. notes, 1911-1914..... | 4,556,000 | None | October |
| Fitchburg R. R..... | 4½ per cent. bonds..... | 1,200,000 | 15 \$100,000 | December |
| Fort Dodge, Des Moines & Southern..... | Receiver's certificates..... | 720,000 | \$500,000 | May |
| Grand Trunk..... | Guaranteed mtge. bonds..... | 30,000,000 | None | April |
| Grand Trunk Pacific..... | 4 per cent. debenture bonds..... | 3,000,000 | None | September |
| Great Northern..... | 1st and refund. mtge. 4½ per cent. bonds of 1911-1966 | 35,000,000 | None | June |
| Gulf & Ship Island..... | Gen. and refund. mtge. 6 per cent. bonds of 1911-1917 | 500,000 | \$500,000 | February |
| Gulf, Florida & Alabama..... | 1st mtge. 5 per cent. bonds, 1911-1961..... | 1,000,000 | None | July |
| Gulf, Texas & Western..... | Stock..... | 250,000 | None | July |
| Gulf, Texas & Western..... | 1st mtge. 5 per cent. bonds..... | 522,000 | None | April |
| Hocking Valley..... | 2-year 4½ per cent. notes..... | 4,000,000 | \$3,250,000 | October |
| Houston Belt & Terminal..... | 1st mtge. 5 per cent. bonds, 1907-1937..... | 2,106,000 | None | September |
| Illinois Central..... | Refunding mtge. 4 per cent. bonds of 1908-1955..... | 780,780 | None | June |
| Illinois Central..... | Refunding 4 per cent. bonds..... | 4,600,000 | None | July |
| Kansas City & Memphis..... | New 5 per cent. mtge. bonds of 1911-1961..... | 540,000 | None | April |
| Kansas City, Ft. Scott & Memphis..... | Refunding mtge. 4 per cent. bonds..... | 2,688,000 | \$2,055,300 | July |
| Kansas City, Mexico & Orient*..... | ..... | ..... | ..... | ..... |
| Kansas City Southern..... | Refunding and improve. mtge. 5 per cent. bonds of 1909-1950..... | 5,000,000 | None | February |
| Kentucky & Indiana Terminal..... | 1st mtge. 4½ per cent. bonds..... | \$1,231,000 (\$5,990,785) | \$2,069,000 | January |
| Lake Erie & Pittsburgh..... | Stock..... | 5,900,000 | None | April |
| Lake Erie & Pittsburgh..... | 1st mtge. bonds, 4½ per cent., 1911-1961..... | 7,500,000 | None | ..... |
| Lake Shore & Michigan Southern..... | Mtge. 4 per cent. bonds of 1906-1931..... | 15,000,000 | None | January |
| Lake Shore & Michigan Southern..... | Notes, 1911-1912..... | 12,000,000 | \$8,800,000 | March |
| Lake Superior & Ishpeming (Cleveland-Cliffs Iron Co.)..... | 1st mtge. 6 per cent. bonds, 1911..... | 994,000 | None | ..... |
| Lehigh & Hudson River..... | General mtge. 5 per cent. bonds..... | 945,000 | \$945,000 | June |
| Long Island..... | 10 Refunding mtge. 4 per cent. bonds of 1903-1949.... | 600,000 | 600,000 | April |
| Long Island..... | 10-year 4 per cent. bonds..... | 4,000,000 | 17 | October |
| Louisiana & Northeastern..... | Collateral trust notes..... | 1,860,000 | None | November |
| Louisiana Southern..... | 1st mtge. refunding 4½ per cent. bonds..... | 1,000,000 | None | June |
| Louisville & Nashville..... | Atlanta, Knoxville & Cin. Division 4 per cent. bonds. | 10,000,000 | None | April |
| Maine Central..... | 4½ per cent. notes, April 1, 1911-1912..... | 5,000,000 | None | April |
| Maine Central..... | Consolidated refunding mtge. 4 per cent. bonds of 1911-1961..... | 12,000,000) 5,000,000 } | \$15,484,000 | ..... |
| Marshall & E. Texas..... | 1st mtge. 5 per cent. bonds, 1911-1931..... | 1,154,000 | \$1,154,000 | ..... |
| Memphis Union & Station..... | 2-year 10 guaranteed 5 per cent. notes..... | 2,100,000 | \$1,500,000 | October |
| Michigan Central..... | Detroit River Tunnel 4½ per cent. bonds of 1911-1961 | 16,000,000 | None | June |
| Minneapolis, St. Paul & Sault Ste. Marie..... | Equipment trust certificates..... | 1,190,000 | None | March |
| Minneapolis, St. Paul & Sault Ste. Marie..... | Chicago Terminal 4 per cent. bonds of 1911-1941.... | 6,000,000 | None | November |
| Minneapolis, St. Paul & Sault Ste. Marie..... | Preferred stock..... | 2,189,400 | None | October |
| Minneapolis, St. Paul & Sault Ste. Marie..... | Common stock..... | 4,374,800 | None | October |
| Mississippi River & Bonne Terre..... | 1st mtge. sinking fund 5 per cent. bonds of 1911-1931. | 2,500,000 | None | October |
| Missouri, Kansas & Texas..... | 5 per cent. 2-year notes..... | 12,500,000 | \$10,000,000 | March |
| Missouri, Kansas & Texas..... | Consolidated mtge. 5 per cent. bonds of 1910-1940.... | 100,000,000 francs (\$20,000,000) | None | June |
| 10 Missouri Pacific..... | Equipment trust notes..... | 5,300,000 | None | November |
| Missouri Pacific..... | 3-year collateral notes..... | 20,000,000 | \$5,000,000 | May |
| National Railways of Mexico..... | 2-year 4½ per cent. notes..... | 10,000,000 | 3,708,548 | May |
| National Railways of Mexico..... | Loan..... | 13,000,000 | 5,000,000 | November |
| New Orleans, Ft. Jackson & Grand Isle..... | Bonds..... | 5,000,000 | None | ..... |
| New Orleans, Mobile & Chicago..... | 1st and refunding mtge. 5 per cent. bonds..... | 12,046,500 | None | November |
| New Orleans Terminal Co..... | 1st mtge. 4 per cent. bonds of 1903-1953..... | 4,000,000 | None | March |
| New York Central & Hudson River..... | Secured 4½ per cent. notes of 1911-1914..... | 30,000,000 | None | February |
| New York, New Haven & Hartford..... | B. R. Holding Co. pref. stock 4 per cent..... | 5,003,000 | 21 | January |
| New York, New Haven & Hartford..... | N. Y., Westchester & Boston 1st mtge, 4½ per cent. bonds, July 1, 1911-1946..... | 17,200,000 | ..... | July |
| New York, New Haven & Hartford..... | 1-year 4½ per cent. notes..... | 2,000,000 | ..... | January |
| New York, New Haven & Hartford..... | 1-year 4½ per cent. notes..... | 10,000,000 | ..... | January |
| New York, Ontario & Western..... | General mtge. 4 per cent. bonds..... | 2,702,000 | None | February |
| New York, Susquehanna & Western..... | Car Trust 4½ per cent. certificates..... | 800,000 | None | July |
| Norfolk Southern..... | 1st and refund. mtge. 5 per cent. bonds of 1911-1961. | 5,837,000 | None | May |
| Norfolk Terminal Ry..... | 1st mtge. 4 per cent. bonds of 1911-1961..... | 1,000,000 | None | March |
| Old Colony R. R..... | Stock..... | 800,000 | 24 | March |
| Oregon-Washington R. R. & Nav. Co..... | 1st and refund. mtge. 4 per cent. bonds of 1911-1961.. | 6,500,000 | 25 | November |
| Oregon-Washington R. R. & Nav. Co..... | 1st and refund. mtge. 4 per cent. bonds of 1911-1961.. | 25,000,000 | None | June |
| Oregon Short Line..... | 1st and consol. mtge. 5 per cent. bonds of 1910-1960.. | 24,000,000 | None | May |
| Pennsylvania Railroad..... | Phila., Balt. & Wash. 4 per cent. bonds due 1943.... | 4,500,000 | ..... | ..... |
| Pennsylvania Railroad..... | Stock..... | 41,261,600 | \$15,237,500 | April |
| Pere Marquette..... | Collateral trust 6 per cent. notes of 1911-1916..... | 8,000,000 | None | February |
| Pere Marquette..... | Equipment trust 5 per cent. notes..... | 870,000 | None | June |
| Pittsburgh & Shawmut..... | Equip. and 1st lien collateral 6 per cent. notes, June 1, 1911-1913..... | 3,250,000 | ..... | July |
| Pittsburgh & Shawmut..... | 1st mtge. 5 per cent. sinking fund bonds..... | ..... | ..... | January |
| Philadelphia & Reading..... | Stock..... | 25,000,000 | 27 | February |
| Pittsburgh & Lake Erie..... | Stock..... | 4,200,000 | None | March |
| Pittsburgh, Ft. Wayne & Chicago..... | Guaranteed special stock..... | 3,328,300 | ..... | ..... |
| Pittsburgh, Shawmut & Northern..... | 5-year receiver's certificates..... | 875,000 | ..... | February |
| Reading Co..... | General mtge. 4 per cent. bonds of 1907-1911..... | 18,811,000 | \$18,811,000 | March |
| St. Louis & San Francisco..... | General lien 5 per cent. 15-20-year bonds..... | 7,000,000 | \$5,443,000 | April |
| St. Louis & San Francisco..... | New Orleans, Texas & Mexico Division 1st mtge. 5 per cent. bonds..... | 5,000,000 | None | April |
| St. Louis & San Francisco..... | New Orleans, Texas & Mexico Division 1st mtge. 4½ per cent. bonds..... | 5,000,000 | None | April |
| St. Louis & San Francisco..... | 2-year 5 per cent. notes..... | 2,500,000 | None | May |
| St. Louis & San Francisco..... | Equipment trust notes..... | 3,000,000 | ..... | ..... |
| St. Louis & San Francisco..... | Refunding Kansas City, Ft. Scott & Memphis 4 per cent. bonds..... | 2,700,000 | \$2,055,300 | March |
| St. Louis & San Francisco..... | General lien 15-20-year 5 per cent. bonds..... | 2,553,000 | None | December |
| St. Louis Southwestern..... | Central Arkansas & Eastern 1st mtge. 5 per cent. guaranteed bonds of 1910-1940..... | 800,000 | None | March |
| St. Louis Southwestern..... | Equipment 5 per cent. notes..... | 1,620,000 | None | January |
| Seaboard Air Line..... | Refunding mtge. 4 per cent. bonds of 1909-1959..... | 19,000,000 | 28 | April |
| Seaboard Air Line..... | Refunding mtge. 4 per cent. bonds..... | 4,000,000 | None | April |
| Seaboard Air Line..... | Adjustment bonds..... | 6,785,900 | 29 | November |
| Seaboard Air Line..... | 4½ per cent. equipment notes, 1911..... | 1,500,000 | ..... | August |
| Southern Railway..... | First consolidated 5 per cent. bonds, 1994..... | 1,500,000 | 1,580,000 | March |
| Southern Pacific..... | Central Pacific collateral trust 4 per cent. bonds..... | 250,000,000 francs (\$50,000,000) | ..... | February |
| Stephenville, North & South Texas..... | 1st mtge. 30-year 5 per cent. guaranteed bonds..... | 2,000,000 | None | April |

| Name of company. | Kind of security issued. | Amount sold. | Amount of refund- ing covered. | Month in which sold. |
|-----------------------------------|--|--------------|-----------------------------------|-------------------------|
| Temiskaming & No. Ontario..... | Loan by the Province of Ontario..... | \$1,512,324 | ..... | March |
| Valdosta, Moultrie & Western..... | 1st mtge. bonds..... | 630,000 | 300,000 | July |
| Wabash..... | 5 per cent. equipment notes..... | 1,000,000 | ..... | September |
| Wabash-Pittsburgh Terminal..... | Receiver's certificates..... | 1,000,000 | None | February |
| Wabash-Pittsburgh Terminal..... | Receiver's certificates..... | 433,771 | \$433,771 | April |
| Western Maryland..... | 1st mtge. 4 per cent. bonds..... | 4,114,000 | 3,900,000 | July and Aug. |
| Wheeling & Lake Erie..... | 5 per cent. notes..... | 8,000,000 | 8,000,000 ³⁰ | February |
| Wichita Union Terminal..... | 0 year 4 1/4 per cent. gold bonds..... | 2,500,000 | ..... | September |
| Winston Salem Southbound..... | 1st mtge. 4 per cent. bonds of 1910-1960 ³¹ | 5,000,000 | None | February |

Note.—Issues of less than \$500,000 have been disregarded except in certain cases of receivers' certificates where apparently there was small lots sold at different times total more than \$500,000.

¹ The company was organized to own \$3,100,000 common stock and \$2,190,000 preferred stock of the Ann Arbor Railroad, which was sold under foreclosure of the \$5,500,000 5 per cent. notes of the D., T. & I.

² This stock has been deposited with the reorganization committee since 1896.

³ Clark, Dodge & Co. and White, Weld & Co., both of New York, offered to pay this amount of certificates in cash or extend them for one year.

⁴ \$500,000 was paid to stockholders as a stock dividend and the other \$500,000 was sold to provide for improvements.

⁵ These notes were sold to pay in part for the Worcester, Nashua & Rochester, mentioned in the article on Changes in Ownership and Control.

⁶ This is Boston & Maine common stock which was paid for with the proceeds of the Railroad holding company's preferred stock.

⁷ Offered to stockholders at 150.

⁸ Issued, it is understood, to the St. Paul for advances for construction of branch lines, etc.

⁹ Part of the proceeds of this sale were used to pay for all of the stock and bonds outstanding of the St. Paul & Des Moines.

¹⁰ Sold to stockholders. The Pennsylvania Company owns the majority of the stock of the Cleveland & Pittsburgh.

¹¹ Sold to reimburse the Pennsylvania for additions and betterments made under the lease.

¹² Proceeds used to reimburse the Boston & Maine for expenditures under the 99-year lease.

¹³ The additional proceeds were used to reimburse the Boston & Maine for additions and betterments.

¹⁴ Guaranteed principal and interest by the Pennsylvania Railroad.

¹⁵ Issued to the Pennsylvania Railroad to pay for advances for improvements.

¹⁶ Guaranteed by the Louisville & Nashville, the Nashville, Chattanooga & St. Louis, the St. Louis, Iron Mountain & Southern, the Southern Railway, and the St. Louis Southwestern.

¹⁷ About half of these notes were issued in the name of the St. Louis, Iron Mountain & Southern, and the other half in the name of the Missouri Pacific.

¹⁸ Guaranteed principal and interest jointly and severally by the St. Raleigh & Southport and the Aberdeen & Ashboro.

¹⁹ The sale of this stock by the New Haven was to provide cash to pay for \$5,500,000 Boston & Maine new common stock, authorized.

²⁰ The proceeds of the sale are to reimburse the N. Y. N. H. & H. for additions and betterments made under the lease.

²¹ These bonds were, it is understood, sold to the Union Pacific and then resold to bankers.

²² There are \$15,000,000 additional of these bonds in the Union Pacific's treasury.

²³ This stock was issued to the Reading Company to reimburse it for the payment of \$2,545,000 prior mortgage 4 per cent. bonds due and paid in July and for \$18,811,000 consolidated mortgage bonds due June 1, 1911.

²⁴ Issued in connection with the reorganization of the property and taken by a banking syndicate.

²⁵ The bonds were held by the Seaboard Company of Connecticut and it is understood that the proceeds of their sale will be used to retire \$6,360,600 first preferred stock.

²⁶ These are notes which were extended previously and on February 1 were extended pending the further settlement of Wabash and Wabash-Pittsburgh Terminal affairs. The notes were due in 1908.

²⁷ Guaranteed jointly and severally by the Norfolk & Western and the Atlantic Coast Line.

²⁸ The financing of the K. C. M. & O. has been done this year by a syndicate and the amount of securities placed has not been made public.

than they were the year before, partly, probably, because the stronger or larger companies had their needs more fully taken care of in 1910, so that the competition for money was not so keen.

It must be carefully borne in mind that the table showing the list of securities issued is made up from records that have been made public during the year, and it is quite possible that certain companies have made private arrangements for loans or for placing securities which have not been made public and which, therefore, are not shown in our table. The table is not totaled because this would be quite misleading. Even if the column showing the amount of refunding covered were totaled and the sum subtracted from the "amount sold" column, the difference would not represent the additional railway capital secured this year, because, for instance, there may be a considerable part of these new securities which are in the nature of collateral trust bonds and which are issued against other railway securities.

The Southern Pacific, the Missouri, Kansas & Texas and the Chicago, Rock Island & Pacific sold whole issues of securities abroad—the Southern Pacific and the Missouri, Kansas & Texas in France, and the Rock Island in England. Of course, parts of many of the other issues of securities were marketed abroad, but, in the three cases mentioned, arrangements were made with foreign bankers by the railway companies and the securities were issued with a face value in French or English currency.

In cases where railway companies have been through the hands of receivers and have been reorganized, the new securities issued in exchange for old securities and to raise new capital are not shown in the accompanying table. Their bonds and stocks are shown in the lists of receiverships and foreclosure sales in the article on that subject elsewhere in this issue.

The changes in dividends shown in the small table are about what might have been expected, with the possible exception of the New York Central's reduction of its annual rate from 6 per cent. to 5 per cent. Roads like the Baltimore & Ohio have continued their regular dividend rate despite difficulties which, on the surface, appear comparable at least to the difficulties of the New York Central. The New York Central's relations, however, with its bankers are such that it can to an unusual extent

DIVIDEND CHANGES IN 1911.

| Name of Company. | *Declared in 1911. Per Cent. | Present Annual Rate. Per Cent. | Month. | Rate in 1910. Per Cent. |
|--|------------------------------------|---|-----------|-------------------------------|
| Albany Southern..... | 3 | 3 | November | 6 |
| Atlantic Coast Line, common..... | 6 1/2 | 7 | January | 0 |
| Atlantic Coast Line of Conn..... | 10 1/2 | 12 | December | 10 |
| Boston & Maine, common..... | 4 1/2 | 4 | May | 6 |
| Buffalo, Rochester & Pittsburgh, common..... | 5 | 5 | February | 4 |
| Canadian Pacific..... | 9 1/2 | 10 | January | 8 |
| Central of Georgia, ¹ incomes..... | .. | .. | ..... | .. |
| Chicago & Alton, preferred..... | 0 | 0 | June | 4 |
| Chicago & Alton, prior liens..... | 2 | 0 | June | 6 |
| Chicago, Mil. & Puget Sound.... | 5 ² | .. | March | 3 |
| Chicago, Terre Haute & South Eastern, income bonds..... | 2 | 4 | September | .. |
| Cincinnati, New Orleans & Pacific | 8 ³ | 6 | November | 5 |
| Cleveland, Cincinnati, Chicago & St. Louis, common..... | 0 | .. | March | 4 |
| Delaware, Lackawanna & Western, common..... | 55 ⁴ | 20 | November | 20 |
| Denver & Rio Grande, preferred. | 0 | 0 | June | 4 |
| Florida East Coast, income bonds. | 4 | 4 | September | 3 1/2 |
| Georgia R. R. & Banking..... | 12 | 12 | March | 11 |
| Grand Trunk, 3d preference stock | 1/2 ⁵ | .. | February | .. |
| Hocking Valley..... | 5 | 6 | November | 4 |
| Interborough Rapid Transit..... | 11 | 11 | September | 9 |
| Kanawha & Michigan..... | 6 1/2 | .. | June | 0 |
| ⁶ New York & Harlem..... | 14 | 14 | September | 13 |
| N. Y. C. & H. R. R..... | 5 | 5 | March | 6 |
| Norfolk & Western, common.... | 5 1/4 | 6 | November | 5 |
| Norfolk Southern..... | 2 | 2 | May | .. |
| Northern Securities Co..... | 3 | 3 | December | 4 |
| Pittsburgh & Lake Erie..... | 35 | 10 | March | 10 ⁷ |
| ⁸ St. Lawrence & Adirondack.... | 4 | 4 | December | 0 |
| Southern Railway, preferred stock | 2 | 2 | February | 0 |
| Vandalia..... | 4 | 4 | May | 5 |
| Wabash, Debenture Bs..... | 3 | 2 | June | 4 |

*This is the amount declared in 1911 regardless of when paid.

¹ The courts found in favor of the income bondholders who had been protesting against the non-payment of dividends on the third preferred and partial payments on the second preferred, and eventually in December the Illinois Central bought the minority outstanding income bonds held by the protective committees of the three series paying back dividends on these bonds.

² Of the 5 per cent. paid in 1911, 2 3/10 per cent. was from earnings in 1910-1911 and 2 7/10 from 1909-1910 earnings.

³ Beside an increase in the annual rate, there was an extra dividend of 2 1/2 per cent. declared in November.

⁴ 35 per cent. extra stock dividend was paid in the stock of the Lackawanna Railroad.

⁵ Declared in 1911 but paid from 1910 earnings.

⁶ A rental equal to 10 per cent. on the stock is paid by the N. Y. C. & H. R. and the remaining dividend is paid from the rental received for the street railway property of the company.

⁷ There was also paid in 1910 a 40 per cent. extra dividend; as will be seen the extra dividend in 1911 was 25 per cent.

⁸ All of the stock of this company is owned by the New York Central & Hudson River.

rely on its bankers to take care of its credit. It is possible, therefore, to readjust the dividend rate to current net earnings, or rather current net corporate income, somewhat more closely than is the case with most other railway companies, where a reduction in the dividend rate might make it unprofitable to sell new securities for capital purposes. We may, therefore, fairly say that the New York Central's reduction of dividends was somewhat out of line with the showing made by the other roads.

For instance, it is not surprising to find an increase in the Buffalo, Rochester & Pittsburgh and the Norfolk & Western, and we would expect the Chicago & Alton and the Denver & Rio Grande to discontinue dividends. The reduction in the C. C. C. & St. L. is in line with the New York Central & Hudson River's reduction.

The resumption of a dividend on the preferred stock of the Southern Railway is an indication both of the prosperity of the South and of the results that are being shown from the expenditure of the sale of general development 4 per cent. bonds of 1909. The fact that the dividend rate has only been put on a 2 per cent. basis as yet shows a conservative attitude on the part of the directors, justified by the fact that the Southern Railway still has some discount on securities sold remaining over from the sale of development 4's in recent years to be charged off.

THE TREND OF RAILWAY EARNINGS.

BY FRANK HAIGH DIXON,

Professor of Economics, Dartmouth College; Chief Statistician, Bureau of Railway Economics.

In attempting to comply with the request of the *Railway Age Gazette* for a comparison of the trend of railway earnings and expenses in 1907, 1910 and 1911, the writer is hampered by lack of complete and comparable data. Monthly reports of the railways to the Interstate Commerce Commission were not inaugurated until July, 1907, so that no current data is available for the first half of that year. But to rely altogether for this presentation upon the summary of railway monthly reports as issued by the commission would give us data for only eight months of the

sion. In using the commission's figures for 1907, it is necessary to keep in mind that they are upon a different basis. Including all mileage, instead of only those roads over 50 miles long, the per mile figure is necessarily lower than it would be if, as in the bureau figures, the small roads were excluded, for the small roads bring down the average per mile in both revenues and expenses. The commission's per mile figures of both revenues and expenses run regularly from 4 to 5 per cent. lower than the figures of the bureau. Hence, an adjustment of the commission's per mile figures, which would raise them on an average $4\frac{1}{2}$ per cent. above the amounts given in the table, would be necessary in order to make them comparable with the bureau figures.

It will be of interest, in the first place, to present (Table I) total and per mile figures of revenues and expenses for the fiscal years 1907 to 1911, inclusive, with the percentage of increase or decrease in the per mile figure for each year. It should be noted that the 1907 figures are not wholly comparable with those of the later years. They are taken from the annual statistical volume of the commission and cover a period just preceding the inauguration of the new accounting system. The figures of the succeeding years are drawn from the summaries of the monthly reports, except that the 1911 figures are a compilation of the unadjusted monthly totals.

The earnings of the year 1907, up to that time the greatest in our history, were exceeded in 1910, when the per mile figure of operating revenues reached \$11,660, an increase of 11.4 per cent. over the previous year. The fiscal year 1911 shows a slight falling off from this figure, amounting to 0.21 per cent. The recovery after the panic of 1907 was more rapid in net earnings than in gross, due to rapid diminution in operating expenses, so that, whereas the year 1909 shows a decrease per mile in operating revenues as compared with 1908, net earnings show an increase of 10.12 per cent. Another increase in net earnings per mile followed in 1910, of nearly 11 per cent., but the year 1911 shows a decline of over 7 per cent. from the preceding year. The explanation is found in the operating expense column, where, in face of a decline in operating revenues, the expenses increased over 3 per cent. This situation will be made clearer in the succeeding table. As is generally known,

TABLE I.—REVENUES AND EXPENSES, TOTAL AND PER MILE, ALL ROADS; FISCAL YEARS 1907-1911.

| Year. | Operating Revenues. | | | Operating Expenses. | | | Net Operating Revenue. | | |
|-------|--------------------------|--------------|---|--------------------------|--------------|---|--------------------------|--------------|---|
| | Total. (000 omitted.) | Per Mile. | Per cent. increase or decrease from previous year. | Total. (000 omitted.) | Per Mile. | Per cent. increase or decrease from previous year. | Total. (000 omitted.) | Per Mile. | Per cent. increase or decrease from previous year. |
| 1907 | \$2,589,106 | \$11,383 | ..... | \$1,748,516 | \$7,687 | ..... | \$840,590 | \$3,696 | ..... |
| 1908 | 2,421,542 | 10,613 | -6.76 | 1,687,145 | 7,394 | -3.81 | 734,397 | 3,219 | -12.90 |
| 1909 | 2,444,695 | 10,466 | -1.38 | 1,616,572 | 6,921 | -6.39 | 828,123 | 3,545 | +10.12 |
| 1910 | 2,787,266 | 11,660 | +11.40 | 1,847,190 | 7,727 | +11.64 | 940,076 | 3,933 | +10.94 |
| 1911 | 2,810,735 | 11,635 | -0.21 | 1,928,742 | 7,984 | +3.32 | 881,993 | 3,651 | -7.17 |

present year, the report for September not yet having appeared. It has seemed best, therefore, to rely in the main upon the material separately compiled by the Bureau of Railway Economics, which covers the year 1910 and the first ten months of 1911. The bureau figures include only roads over 50 miles long, that is, about 90 per cent. of the total mileage, but they cover all figures that have any significance from the point of view of this discus-

the principal explanation is to be found in the increased cost of labor. But in addition it should be noted as a fundamental principle, which is graphically illustrated in the chart below, that expenses are relatively more stable than earnings. Due to the conditions under which railways operate, increases in gross earnings are not usually followed by parallel increases in expenses, and the increase contributes more than its normal

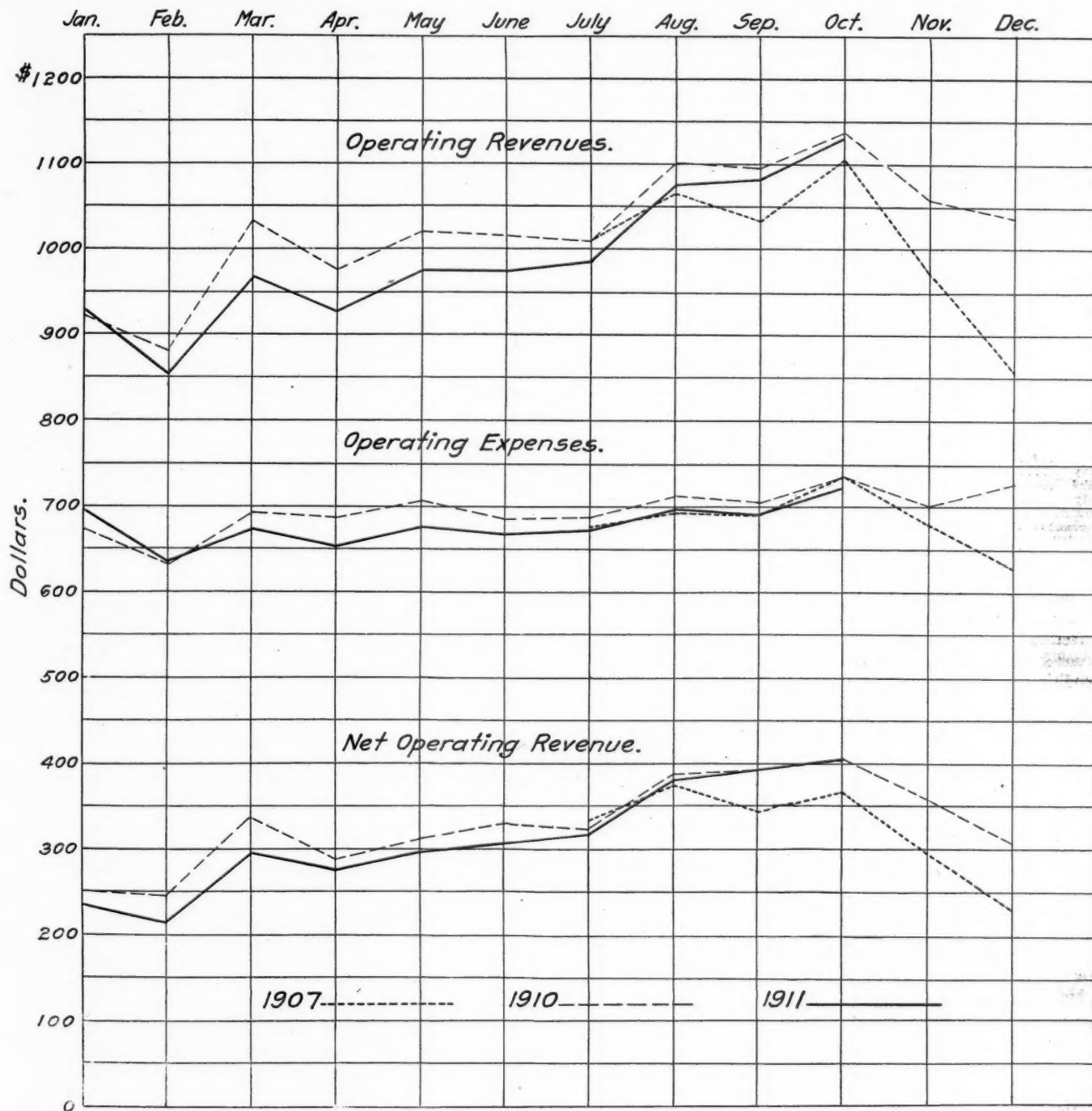
TABLE II.—MONTHLY REVENUES AND EXPENSES PER MILE OF LINES, 1907, ALL ROADS; 1910 AND 1911, ROADS OVER 50 MILES LONG.

| Month. | Operating Revenues per Mile. | | | Operating Expenses per Mile. | | | Net Operating Revenue per Mile. | | | Operating Ratio. | | |
|-----------|------------------------------|-------|-------|------------------------------|-------|-------|---------------------------------|-------|-------|------------------|-------|-------|
| | 1907. | 1910. | 1911. | 1907. | 1910. | 1911. | 1907. | 1910. | 1911. | 1907. | 1910. | 1911. |
| January | | \$923 | \$927 | ..... | \$672 | \$694 | ..... | \$251 | \$233 | ..... | 72.9 | 74.9 |
| February | | 880 | 851 | ..... | 631 | 636 | ..... | 249 | 215 | ..... | 71.7 | 74.7 |
| March | | 1,033 | 969 | ..... | 693 | 672 | ..... | 339 | 296 | ..... | 67.1 | 69.4 |
| April | | 977 | 929 | ..... | 688 | 654 | ..... | 289 | 275 | ..... | 70.4 | 70.4 |
| May | | 1,020 | 975 | ..... | 708 | 678 | ..... | 312 | 297 | ..... | 69.4 | 69.5 |
| June | | 1,016 | 975 | ..... | 686 | 668 | ..... | 330 | 307 | ..... | 67.6 | 68.6 |
| July | | 1,010 | 988 | ..... | 687 | 671 | ..... | 323 | 318 | ..... | 68.1 | 67.9 |
| August | | 1,065 | 1,101 | ..... | 714 | 698 | ..... | 353 | 388 | ..... | 64.99 | 64.8 |
| September | | 1,033 | 1,097 | ..... | 691 | 705 | ..... | 343 | 392 | ..... | 66.64 | 64.6 |
| October | | 1,103 | 1,138 | ..... | 735 | 723 | ..... | 368 | 403 | ..... | 69.92 | ..... |
| November | | 968 | 1,057 | ..... | 677 | 700 | ..... | 291 | 357 | ..... | 73.40 | ..... |
| December | | 852 | 1,035 | ..... | 626 | 726 | ..... | 227 | 309 | ..... | ..... | ..... |

proportion to net earnings. Similarly, as all railway managers have reason to know, a drop in gross earnings cannot be compensated for, at least immediately, in a corresponding reduction of expenses, and net suffers out of proportion to the decline in gross.

Table II, showing operating revenues, expenses and net revenue for roads over 50 miles long for 1910 and 1911 by months, is taken from the monthly reports of the Bureau of Rail-

ber, 1911, operating revenues were consistently less per mile than in 1910, although the difference has been growing less since June. The October per mile figure is only 0.7 per cent. less than that for 1910. A similar decrease has been taking place in operating expenses per mile since March, varying from 4.9 per cent. in April to 1.6 per cent. in October. This vigorous policy on the part of roads, designed to overcome the decline in gross earnings and the increase in wage cost, has displayed itself



Monthly Revenues and Expenses Per Mile of Line.
All roads in 1907; roads over 50 miles long in 1910 and 1911.

way Economics. The 1907 figures, as already noted, are from the commission's reports.

In the spring of 1910 most of the wage increases went into effect. From June until December, 1910, net revenue per mile for each month was less than for 1909, although in only one of these months, November, were the operating revenues less than in the preceding year. Net was directly affected by the increase in expenses. As is shown by the table, from February to Octo-

ber, 1911, operating revenues were consistently less per mile than in 1910, although the difference has been growing less since June. The October per mile figure is only 0.7 per cent. less than that for 1910. A similar decrease has been taking place in operating expenses per mile since March, varying from 4.9 per cent. in April to 1.6 per cent. in October. This vigorous policy on the part of roads, designed to overcome the decline in gross earnings and the increase in wage cost, has displayed itself

improvement since February. As a result, there is an actual increase of 1 per cent. in net earnings per mile for October as compared with 1910, notwithstanding a decrease of 0.7 per cent. in operating revenues.

Finally, it will be of interest to follow the bureau's division of railways into groups corresponding roughly to the three great classification territories. Table III shows, as might be expected from the diverse character of the traffic regions, a marked variation in the financial condition of the railways of the different sections. In the East, while operating revenues have been slightly less for 1911 than for 1910, operating expenses have been so reduced that since March net earnings per mile have been in excess of those for the corresponding months of 1910. In the South, operating revenues have maintained themselves, and, in all the months except two, have been in excess of those for 1910. Operating expenses have also been larger, but not enough larger to prevent a good showing in net. In seven months out of ten, net operating revenue per mile shows an increase over 1910, the excess in September reaching 10.6 per cent. The Western group presents no such favorable showing. Operating reve-

MILEAGE OF RAILWAYS BLOCK SIGNALLED.

The length of railways worked by the block system in the United States is now something over 73,000 miles, as shown in the accompanying table. This is an increase over the aggregate shown one year ago of probably less than 2,000 miles; but the increase in automatic signals is more than this amount; in other words, the progress that has been made during the past year has been largely in the improvement of existing lines by the substitution of automatic signals for the manual block system.

The condensed comparison of the present figures with those of one year ago, as compiled by the Interstate Commerce Commission and shown in the *Railway Age Gazette* of April 21, 1911, is as follows:

| | January 1, 1911. | January 1, 1912. |
|--|---------------------|---------------------|
| Automatic signals, miles of road..... | 17,711 | 19,995 |
| Manual | 53,558 | 53,071 |
| Total | 71,269 | 73,066 |
| Deduct for mileage having both manual and automatic ..... | ..... | 25 |
| | 71,269 | 73,041 |

TABLE III. MONTHLY REVENUES AND EXPENSES PER MILE OF LINE IN 1911; ROADS OVER 50 MILES LONG, BY GROUPS.

| Month of 1911. | Eastern Group | | | | | | Southern Group | | | | | | Western Group | | | | | |
|----------------------|----------------------|---|----------------------|---|----------------------|---|----------------------|---|----------------------|---|----------------------|---|----------------------|---|----------------------|---|----------------------|---|
| | Oper. Rev. | | Oper. Exp. | | Net Op. Rev. | | Oper. Rev. | | Oper. Exp. | | Net Op. Rev. | | Oper. Rev. | | Oper. Exp. | | Net Op. Rev. | |
| | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. | Am't per mile. | Per cent. inc. or dec. from 1910. |
| January | \$1,463 | +0.4 | \$1,127 | +6.6 | \$336 | -16.1 | \$775 | +7.4 | \$535 | +9.9 | \$240 | +2.2 | \$672 | -1.0 | \$500 | -2.1 | \$172 | +2.1 |
| February | 1,332 | -3.3 | 1,035 | +2.8 | 297 | -19.8 | 739 | +6.0 | 505 | +8.2 | 233 | +1.6 | 623 | -5.5 | 459 | -2.9 | 165 | -12.0 |
| March | 1,547 | -5.7 | 1,107 | -1.2 | 440 | -15.4 | 815 | +0.3 | 539 | +4.3 | 276 | -6.8 | 704 | -8.3 | 480 | -6.8 | 224 | -11.4 |
| April | 1,515 | -0.1 | 1,056 | -1.7 | 459 | +3.7 | 731 | -2.5 | 513 | +1.8 | 218 | -11.4 | 671 | -10.2 | 479 | -9.9 | 193 | -11.0 |
| May | 1,598 | -0.1 | 1,109 | -1.1 | 488 | +2.1 | 730 | -4.8 | 516 | -3.4 | 214 | -8.1 | 712 | -7.9 | 493 | -6.9 | 218 | -10.0 |
| June | 1,598 | -0.6 | 1,101 | -2.1 | 498 | +2.9 | 693 | +0.8 | 493 | +1.0 | 200 | +0.4 | 720 | -8.5 | 485 | -3.5 | 235 | -17.2 |
| July | 1,603 | +1.3 | 1,089 | -1.3 | 514 | +7.3 | 708 | +3.0 | 496 | +1.1 | 212 | +7.8 | 724 | -7.3 | 486 | -4.6 | 239 | -12.3 |
| August | 1,761 | -0.1 | 1,135 | -2.6 | 627 | +4.8 | 754 | +4.3 | 515 | +3.8 | 239 | +5.2 | 795 | -5.9 | 507 | -3.2 | 288 | -10.2 |
| September .. | 1,739 | -0.2 | 1,143 | -1.4 | 596 | +2.2 | 785 | +6.7 | 518 | +4.8 | 267 | +10.6 | 819 | -4.7 | 500 | -4.6 | 320 | -4.8 |
| October | 1,738 | -0.4 | 1,169 | -1.5 | 569 | +2.0 | 842 | +5.7 | 551 | +7.1 | 291 | +3.1 | 876 | -2.7 | 524 | -4.2 | 352 | -0.3 |

nues show decreases per mile in every one of the ten months, and the declines in operating expenses have not yet succeeded in offsetting this unfavorable situation. However, by vigorous pruning of their expenses, the roads are steadily improving their condition, the percentage of decrease per mile having fallen continuously from 17.2 per cent. in June to 0.3 per cent. in October.

The accompanying diagram shows graphically the per mile figures of operating revenues, expenses, and net for the last six months of 1907 for all roads, and for the twelve months of 1910 and the ten months of 1911 for roads over 50 miles long. The discrepancy already noted between the 1907 figures and those of the other two years should be recalled in the examination of this diagram.

The question which will naturally be asked is: "What of the future?" It would appear from the tables that the situation has improved considerably as compared with the early months of the year, but it is yet far from satisfactory. As to the future, in the face of the conflicting opinions of the business community which appear in such numbers after every change in the Wall Street barometer, it would be presumptuous for a mere statistician to venture a prediction. Suffice it to say that improvements in railway earnings do not usually come suddenly or without certain well-recognized harbingers of bettered conditions. Such harbingers have not yet appeared in clear outline upon the horizon.

The proposed railway extension in Penang, Straits Settlements, from Bukit Mertajam will run northward through the province of Wellesley to Sungei Patani; thence across the Mirbok river between Sans Souci and Mirbok, to Guruk, on to the southern end of Wan Mat canal; thence probably parallel to the canal into Alor Star, and so direct to Perlis. Owing to engineering difficulties, it is considered inadvisable to take the line to Kulim. A new town will be laid out on modern lines at Sungei Patani, near the site of the existing village.

The mileage of the following roads, as given in the table, is copied from the statement issued by the commission a year ago, the replies to our request for revised figures having failed to reach us at the time of going to press: Ann Arbor; Baltimore & Ohio; Chesapeake & Ohio; Cleveland, Akron & Cincinnati; Chicago & Alton; Chicago Great Western; Chicago, Indiana & Southern; Chicago, Peoria & St. Louis; Chicago, Rock Island & Pacific; Elgin, Joliet & Eastern; Kansas City, Clinton & Springfield; Kentucky & Indiana Bridge; Kentwood & Eastern; Louisville & Nashville; Michigan Central; Missouri Pacific; New York Central Lines (Cleveland, Cincinnati, Chicago & St. Louis; Lake Erie & Western; Lake Shore & Michigan Southern); San Francisco, O. & S. J.; Seaboard Air Line; Toledo, St. Louis & Western; Union.

As has been explained in the tables published in previous years, the manual block signaling reported by American railways in many cases represents facilities which provide for the constant use of the space interval for the protection of passenger trains, both in front and in rear, but do not afford such complete protection for freight trains; and on single track lines the protection for trains of both classes, as regards opposing movements, is in part dependent for its security on the rules of the time-table and the supervision of the train dispatcher who makes meeting points.

The column in the table showing miles of road operated, excludes sections of road used only for freight trains, and in some cases excludes also those passenger lines on which there is usually but one engine in service at any one time. In a few cases it will be seen that the total mileage of road block signaled is greater than the total length of passenger lines operated, the block system being provided on those lines used exclusively for freight.

The increases shown in the last column of the table are found by comparison, not with our table published last December, but with the government table above referred to.

LENGTH OF RAILWAYS WORKED BY THE BLOCK SYSTEM JANUARY 1, 1912.

(See Notes in Accompanying Text.)

| Name of Railway. | Miles of road | | | | | | Total, both kinds. | Total passenger lines operated. | Percentage operated under block system. | Increase, miles. |
|---|-------------------------|---------------------|--------|-----------------------------|---------------------|--------|--------------------|---------------------------------|---|------------------|
| | Automatic block signals | | | Non-automatic block signals | | | | | | |
| | Single track. | Two or more tracks. | Total. | Single track. | Two or more tracks. | Total. | | | | |
| Ann Arbor | ... | ... | ... | 1 | ... | 1 | 1 | 292 | ... | ... |
| Atchison, Topeka & Santa Fe System..... | 69 | 136 | 205 | 997 | 532 | 1,529 | 1,734 | 8,945 | 19 | 167 |
| Atlantic Coast Line | 3 | 12 | 15 | 373 | 102 | 475 | 490 | 3,832 | 13 | ... |
| Auburn & Northern | 7 | ... | 7 | ... | ... | ... | 7 | 7 | 100 | ... |
| Baltimore & Ohio (including B. & O. S. W.)..... | 15 | 217 | 232 | 1,286 | 720 | 2,006 | 2,239 | 4,122 | ... | ... |
| Baltimore & Ohio Chicago Terminal..... | 1 | 11 | 12 | ... | ... | ... | 12 | 46 | 26 | 2 |
| Baltimore & Sparrow's Point..... | ... | ... | ... | 2 | 3 | 5 | 5 | 5 | 100 | ... |
| Bessemer & Lake Erie..... | ... | ... | ... | 65 | 135 | 200 | 200 | 191 | 100 | ... |
| Boston & Maine..... | 349 | 593 | 942 | ... | ... | ... | 942 | 2,239 | 44 | 240 |
| Boston, Revere Beach & Lynn..... | ... | 14 | 14 | ... | ... | ... | 14 | 14 | 100 | ... |
| Buffalo, Rochester & Pittsburgh..... | ... | 36 | 36 | 301 | 75 | 376 | 412 | 412 | 100 | ... |
| Butte, Anaconda & Pacific..... | 8 | ... | 8 | ... | ... | ... | 8 | 25 | 32 | ... |
| Central New England | ... | ... | ... | 16 | ... | 16 | 16 | 275 | 6 | ... |
| Central of Georgia | ... | ... | ... | 53 | 7 | 60 | 60 | 1,916 | 3 | ... |
| Central of New Jersey..... | 13 | 199 | 212 | ... | ... | ... | 212 | 464 | 45 | ... |
| Chesapeake & Ohio | ... | 183 | 183 | 1,543 | 126 | 1,669 | 1,852 | 1,876 | 99 | ... |
| Chicago & Alton | 416 | 145 | 561 | 141 | ... | 141 | 702 | 999 | ... | ... |
| Chicago & Eastern Illinois..... | ... | 98 | 98 | 277 | 55 | 332 | 430 | 973 | 44 | ... |
| Chicago & North Western..... | ... | 743 | 743 | 2,413 | 116 | 2,529 | 3,272 | 6,980 | 47 | 8 |
| Chicago & Western Indiana..... | ... | 19 | 19 | ... | 8 | 8 | 27 | 27 | 100 | ... |
| Chicago, Burlington & Quincy..... | 45 | 50 | 95 | 7,923 | 659 | 8,582 | 8,677 | 8,990 | 96 | ... |
| Chicago Great Western | 61 | 65 | 126 | 1,307 | 24 | 1,331 | 1,457 | 1,472 | ... | ... |
| Chicago, Indianapolis & Louisville..... | 162 | ... | 162 | 416 | ... | 416 | 578 | 611 | 94 | 10 |
| Chicago, Milwaukee & St. Paul..... | 6 | 104 | 110 | 3,329 | 478 | 3,807 | 3,917 | 7,296 | 54 | ... |
| Chicago, Milwaukee & Puget Sound..... | 248 | ... | 248 | 1,119 | ... | 1,119 | 1,367 | 1,400 | 98 | ... |
| Chicago, Peoria & St. Louis Ry. of Illinois..... | 1 | ... | 1 | ... | ... | ... | 1 | 227 | ... | ... |
| Chicago, Rock Island & Pacific..... | 653 | 280 | 933 | 998 | ... | 998 | 1,931 | 6,683 | ... | ... |
| Chicago, Rock Island & Gulf..... | 33 | ... | 33 | ... | ... | ... | 33 | 466 | ... | ... |
| Chicago, St. Paul, Minneapolis & Omaha..... | ... | 6 | 6 | 592 | 64 | 656 | 662 | 1,527 | 43 | ... |
| Cincinnati, Hamilton & Dayton..... | 19 | 17 | 36 | 115 | 18 | 133 | 169 | 889 | 19 | 2 |
| Colorado Midland | ... | ... | ... | 2 | ... | 2 | 2 | 258 | ... | ... |
| Cornwall & Lebanon | ... | ... | ... | 8 | 14 | 22 | 22 | 22 | 100 | ... |
| Cumberland & Pennsylvania | ... | ... | ... | 4 | 3 | 7 | 7 | 31 | 23 | ... |
| Cumberland Valley | 4 | 50 | 54 | 11 | ... | 11 | 65 | 162 | 40 | 39 |
| Delaware & Hudson..... | 165 | 247 | 412 | ... | ... | ... | 412 | 744 | 55 | ... |
| Delaware, Lackawanna & Western..... | 175 | 510 | 685 | 4 | ... | 4 | 689 | 963 | 71 | 103 |
| Duluth & Iron Range..... | 14 | 2 | 16 | ... | ... | ... | 16 | 168 | 9 | ... |
| Durham & Southern | ... | ... | ... | 56 | ... | 56 | 56 | 56 | 100 | ... |
| Elgin, Joliet & Eastern..... | 2 | 3 | 5 | 11 | ... | 11 | 16 | 224 | ... | ... |
| Erie System | ... | 281 | 281 | 849 | 584 | 1,433 | 1,714 | 2,264 | 75 | ... |
| Evansville & Terre Haute (included in Chi. & E. I.)..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Grand Trunk | 2 | 1 | 3 | ... | ... | ... | 3 | 4,745 | ... | ... |
| Great Northern | 10 | 162 | 172 | 284 | ... | 284 | 456 | 7,100 | 6 | 67 |
| Hocking Valley | ... | ... | ... | 144 | ... | 144 | 144 | 337 | 46 | ... |
| Hudson & Manhattan..... | ... | 8 | 8 | ... | ... | ... | 8 | 8 | 100 | ... |
| Illinois Central | 65 | 247 | 312 | 9 | 5 | 14 | 326 | 4,546 | 7 | ... |
| Yazoo & Mississippi Valley..... | 7 | ... | 7 | ... | 6 | 6 | 13 | 1,371 | 1 | ... |
| Illinois Traction | 145 | ... | 145 | ... | ... | ... | 145 | ... | ... | 121 |
| Iowa Central | ... | ... | ... | 11 | ... | 11 | 11 | 540 | 2 | ... |
| Kanawha & Michigan | 2 | ... | 2 | 2 | ... | 2 | 4 | 163 | ... | ... |
| Kansas City, Clinton & Springfield..... | ... | ... | ... | 2 | ... | 2 | 2 | 157 | ... | ... |
| Kentucky & Indiana Bridge & R. R. Co..... | ... | ... | ... | 5 | 6 | 11 | 11 | 11 | 100 | ... |
| Kentwood & Eastern | ... | ... | ... | 3 | ... | 3 | 3 | 30 | 10 | ... |
| Lackawanna & Wyoming Valley..... | ... | ... | ... | 1 | 2 | 3 | 3 | 23 | 13 | ... |
| Lehigh & New England (less than one mile)..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Lehigh Valley | 14 | 506 | 520 | 646 | 52 | 698 | 1,218 | 1,178 | 100 | ... |
| Long Island | 4 | 118 | 122 | ... | 23 | 23 | 145 | 392 | 37 | 9 |
| Louisville & Nashville..... | 41 | 22 | 63 | 392 | 104 | 496 | 559 | 4,372 | ... | ... |
| Maine Central | 420 | 58 | 478 | ... | ... | ... | 478 | 1,130 | 42 | ... |
| Minneapolis, St. Paul & Sault Ste. Marie..... | ... | ... | ... | 2,447 | 4 | 2,451 | 2,451 | 3,423 | 72 | ... |
| Missouri, Kansas & Texas..... | 8 | ... | 8 | 10 | ... | 10 | 18 | 2,886 | ... | ... |
| Missouri Pacific (including Iron Mtn.)..... | 169 | 34 | 203 | 23 | 8 | 31 | 234 | ... | ... | ... |
| Mobile & Ohio | ... | 5 | 5 | 48 | ... | 48 | 53 | 825 | 7 | ... |
| Monongahela (less than one mile)..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Munising, Marquette & Southeastern..... | ... | ... | ... | 4 | ... | 4 | 4 | 119 | ... | ... |
| Nashville, Chattanooga & St. Louis..... | ... | ... | ... | 93 | 12 | 105 | 105 | 1,230 | 9 | ... |
| Newburgh & South Shore..... | ... | ... | ... | 1 | 6 | 7 | 7 | ... | 100 | ... |
| New York & Long Branch..... | ... | 38 | 38 | ... | ... | ... | 38 | 38 | 100 | ... |
| New York Central Lines— | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Boston & Albany..... | ... | 207 | 207 | ... | 2 | 2 | 209 | 377 | 55 | ... |
| Chicago, Indiana & Southern..... | ... | 5 | 5 | 144 | 60 | 204 | 209 | 309 | 68 | ... |
| Cleveland, Cin., Chicago & St. Louis (including P. & E.)..... | ... | ... | ... | 647 | 364 | 1,011 | 1,011 | 2,171 | ... | ... |
| Lake Erie & Western | ... | ... | ... | 863 | 9 | 872 | 872 | ... | ... | ... |
| Lake Shore & Michigan Southern (including subsidiaries)..... | 7 | 512 | 519 | 1,174 | 60 | 1,234 | 1,753 | ... | ... | ... |
| Michigan Central | ... | 272 | 272 | 901 | 19 | 920 | 1,192 | 1,192 | 100 | ... |
| New York Central & Hudson River..... | 2 | 506 | 508 | 1,593 | 780 | 2,373 | 2,881 | 2,772 | 100 | ... |
| Pittsburgh & Lake Erie..... | ... | 152 | 152 | 3 | ... | 3 | 155 | 170 | 91 | ... |
| New York, New Haven & Hartford..... | 17 | 277 | 294 | 154 | 282 | 436 | 730 | 1,959 | 37 | 22 |
| New York, Ontario & Western..... | 36 | 132 | 168 | ... | ... | ... | 168 | 493 | ... | ... |
| Norfolk & Western | 71 | 376 | 447 | 1,218 | 7 | 1,225 | 1,672 | 1,893 | 88 | 20 |
| Northern Pacific | 103 | 339 | 442 | 780 | 137 | 917 | 1,359 | 5,321 | ... | ... |
| Northwestern Pacific | 14 | 12 | 26 | ... | ... | ... | 26 | 383 | 8 | ... |
| Pennsylvania (all east of Pittsburgh and Erie)..... | ... | 397 | 397 | 2,614 | 1,287 | 3,901 | 4,298 | 4,666 | ... | ... |
| Cleveland, Akron & Cincinnati..... | ... | ... | ... | 138 | 17 | 155 | 155 | 326 | ... | ... |
| Grand Rapids & Indiana..... | ... | ... | ... | 56 | 2 | 58 | 58 | 537 | 11 | ... |
| Pittsburgh, Cincinnati, Chicago & St. Louis..... | ... | 14 | 14 | 490 | 609 | 1,099 | 1,113 | 1,416 | 79 | ... |
| Pennsylvania Lines, N. W. System..... | ... | 517 | 517 | 398 | 179 | 577 | 1,094 | 1,315 | 83 | ... |
| Vandalia | ... | ... | ... | 301 | 61 | 362 | 362 | 827 | 44 | ... |
| Peoria & Pekin Union..... | ... | ... | ... | ... | 6 | 6 | 6 | 15 | 40 | ... |
| Pere Marquette | 15 | ... | 15 | 39 | ... | 39 | 54 | 1,534 | 3 | ... |
| Philadelphia & Reading..... | 21 | 480 | 501 | 278 | 96 | 374 | 875 | 1,272 | ... | ... |
| Quincy, Omaha & Kansas City and Iowa & St. Louis..... | ... | ... | ... | 305 | ... | 305 | 305 | 305 | 100 | ... |
| Queen & Crescent Route— | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Alabama Great Southern..... | 108 | 1 | 109 | ... | ... | ... | 109 | 291 | 37 | 17 |
| Cincinnati, New Orleans & Texas Pacific..... | 263 | 71 | 334 | 1 | ... | 1 | 335 | 335 | 100 | ... |
| New Orleans & Northeastern..... | 77 | 15 | 92 | ... | ... | ... | 92 | 196 | 47 | 77 |
| Richmond, Fredericksburg & Potomac..... | ... | ... | ... | 9 | 79 | 88 | 88 | 88 | ... | ... |
| Rochester, Syracuse & Eastern (Electric)..... | ... | 8 | 8 | ... | ... | ... | 8 | 79 | 10 | ... |
| St. Joseph & Grand Island (less than one mile)..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| St. Louis & San Francisco..... | 694 | 34 | 728 | 90 | ... | 90 | 818 | 4,732 | ... | ... |
| Beaumont, Sour Lake & Western..... | ... | ... | ... | 85 | ... | 85 | 85 | 117 | 72 | ... |
| New Orleans, Texas & Mexico..... | ... | ... | ... | 158 | ... | 158 | 158 | 266 | 60 | ... |
| Orange & Northwestern..... | ... | ... | 62 | ... | 62 | 62 | 62 | 62 | 100 | ... |
| St. Louis Merchants' Bridge Terminal..... | ... | 6 | 6 | ... | 1 | 1 | 7 | 10 | 70 | ... |
| St. Louis Southwestern (less than one mile)..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| San Francisco, Oakland & San Jose Consolidated..... | ... | 4 | 4 | ... | ... | ... | 4 | 16 | 25 | ... |

LENGTH OF RAILWAYS WORKED BY THE BLOCK SYSTEM JANUARY 1, 1912—(Continued).

| Name of Railway. | Automatic block signals | | | Miles of road—Non-automatic block signals | | | Total, both kinds. | Total passenger lines operated. | Percentage operated under block system. | Increase, miles. |
|--|-------------------------|---------------------|--------|---|---------------------|--------|--------------------|---------------------------------|---|------------------|
| | Single track. | Two or more tracks. | Total. | Single track. | Two or more tracks. | Total. | | | | |
| San Pedro, Los Angeles & Salt Lake..... | 1 | ... | 1 | ... | ... | ... | 1 | 904 | ... | ... |
| Seaboard Air Line | ... | ... | ... | 213 | ... | 213 | 213 | 2,783 | ... | ... |
| Southern | ... | 3 | 3 | 1,562 | 273 | 1,835 | 1,838 | 6,965 | 26 | ... |
| Southern Illinois & Missouri Bridge..... | ... | 5 | 5 | ... | ... | ... | 5 | 5 | 100 | ... |
| Southern Pacific, Atlantic System— | | | | | | | | | | |
| Galveston, Harrisburg & San Antonio..... | 279 | ... | 279 | ... | ... | ... | 279 | 1,270 | 22 | ... |
| Louisiana Western | 104 | ... | 104 | ... | ... | ... | 104 | 140 | 74 | ... |
| Morgan's Louisiana & Texas..... | 95 | ... | 95 | ... | ... | ... | 95 | 293 | 32 | ... |
| Texas & New Orleans..... | 110 | ... | 110 | ... | ... | ... | 110 | 438 | 25 | ... |
| Southern Pacific; Pacific System..... | 2,266 | 175 | 2,441 | 87 | 11 | 98 | 2,525 | 6,498 | 39 | ... |
| Staten Island Rapid Transit..... | ... | 12 | 12 | 2 | 9 | 11 | 23 | 23 | 100 | ... |
| Spokane, Portland & Seattle..... | ... | 10 | 10 | ... | ... | ... | 10 | 422 | ... | ... |
| Syracuse, Lake Shore & Northern (Electric)..... | 17 | 6 | 23 | ... | ... | ... | 23 | 38 | 60 | ... |
| Terminal Railroad Association of St. Louis..... | ... | 6 | 6 | ... | 1 | 1 | 7 | 13 | 53 | ... |
| Toledo, Peoria & Western (less than one mile)..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Toledo, St. Louis & Western..... | ... | ... | ... | 188 | ... | 188 | 188 | 451 | 41 | ... |
| Ulster & Delaware | 25 | ... | 25 | ... | ... | ... | 25 | 128 | 20 | ... |
| Union (Pittsburgh) | ... | 1 | 1 | 1 | ... | 1 | 2 | 7 | ... | ... |
| Union Pacific | 778 | 686 | 1,464 | 11 | ... | 11 | 1,464 | 3,506 | 42 | ... |
| Oregon-Washington Railroad & Navigation Co..... | 425 | 14 | 439 | 1 | ... | 1 | 440 | 1,725 | 25 | ... |
| Oregon Short Line | 541 | 36 | 577 | ... | ... | ... | 577 | 1,762 | 33 | ... |
| Virginian | ... | ... | ... | 18 | ... | 18 | 18 | 461 | 4 | ... |
| Wabash | ... | 7 | 7 | 1,727 | 94 | 1,821 | 1,828 | 1,955 | 93 | ... |
| Wabash Pittsburgh Terminal | ... | 4 | 4 | ... | ... | ... | 4 | 60 | 7 | ... |
| Washington Southern | ... | 6 | 6 | ... | 27 | 27 | 33 | 33 | 100 | ... |
| Washington Terminal | ... | 2 | 2 | ... | ... | ... | 2 | 2 | 100 | ... |
| Washington Water Power Co. (Electric)..... | 29 | ... | 29 | ... | ... | ... | 29 | 29 | 100 | ... |
| Western Pacific | 11 | ... | 11 | ... | ... | ... | 11 | 922 | ... | ... |
| Total | 9,465 | 10,530 | 19,995 | 44,648 | 8,423 | 53,071 | 73,041 | ... | ... | ... |

The total automatic block signal mileage of the country is undoubtedly larger than that here shown, as some of the roads from which revised statistics have not been received are known to have installed new signals during the past year.

Following are notes explanatory of some of the items in the table and giving such information as we have received concerning new work to be done during the coming year. Also, a number of items concerning new work proposed have been published in the news columns of our last two issues.

Boston & Maine.—This road plans to install automatic block signals during the coming year on 192 miles of line, mostly single track, namely: North Cambridge, Mass., to Northampton, 100 miles; Prescott to Rochester, N. H., 77 miles; Claremont Junction to Windsor, Vt., 15 miles. At Worcester two mechanical interlockings are to be built; one at Milbrook street, 68 levers, and one at Barbers, 60 levers.

Central New England.—This company is installing 16.5 miles of automatic signals on double-track, which will go into service probably January 15.

Chicago, Indianapolis & Louisville.—The increase in the aggregate mileage of road block signaled is only 10 per cent., but it will be observed that no less than 162 miles formerly worked by the manual system is now equipped with automatic signals.

Cumberland Valley.—This company during the past year has increased its block signal mileage 39 miles, as shown in the table published in this issue. Within the next two months ten miles more of the line, double track, will be equipped with automatic signals.

Eric.—The mileage of road block signaled includes 42.5 double-track, automatic, used only for freight trains.

Illinois Central.—This company is planning to equip 147 miles of its line with automatic block signals during the coming year.

Lehigh Valley.—The mileage of road block signaled includes 40 miles used only for freight trains.

Maine Central.—This company plans to install automatic block signals during the coming year on 36 miles of line.

New York, Ontario & Western.—This company plans to equip with automatic block signals 16 miles of its Scranton division.

Norfolk & Western.—The increase in the aggregate mileage of road block signaled is 20 miles, but the mileage of road equipped with automatic signals has increased 106 miles.

Northern Pacific.—One hundred and eighty miles of double-track, formerly worked by the manual block system, has been equipped during the past year with automatic block signals.

Pennsylvania.—The plans for new automatic block signals to be put up during the coming year, cover 111 miles of road as

follows: From Summerhill to Latrobe, Pittsburgh division, 15 miles electro-pneumatic and 33 miles electric-motor; on the Philadelphia, Baltimore & Washington from Wilmington to Oakington, 36 miles, and Baltimore to Washington, 37 miles, all electric motor signals. In all of these installations the track circuits will be alternating currents.

Pennsylvania Lines West of Pittsburgh.—Automatic block signals are under construction, to be completed in 1912, on eleven miles of line.

Philadelphia & Reading.—The mileage of road signaled includes 15 miles, automatic, used only for freight trains.

Rochester, Syracuse & Eastern.—On 16 miles of line, double-track, there are automatic signals for one track only.

Southern Pacific, Pacific System.—The total length of road block signaled is 14 miles less than is indicated by the detailed items, a length of 11 miles, double-track, being worked in one direction by automatic signals and in the other by non-automatic; and 4 miles single track being equipped with automatic signals, but also controlled by the manual system.

Union Pacific.—Eleven miles worked by both automatic and non-automatic. Automatic block signals are under construction, to be completed in 1912, on 17 miles of line, St. Vrain to La Salle. This is on the Denver Northern main line.

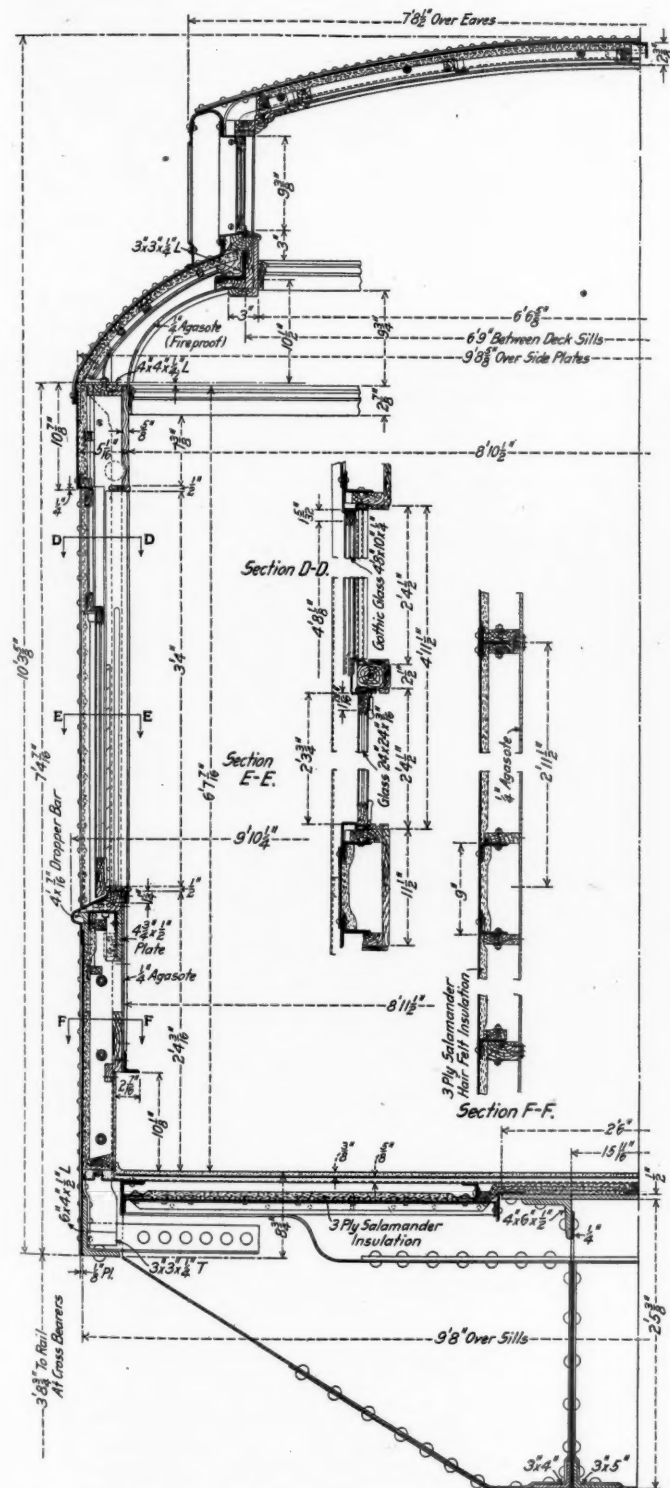
FOREIGN RAILWAY NOTES.

The works of the Pan-American Railway have been inspected between Durazno, in central Uruguay, and Trinidad. Clearing of the right of way and grading between these points have been commenced, and 10 miles of grading have already been finished. Work has been begun on a car barn at Durazno, and material is now on hand at Trinidad for the erection of a station and warehouse at that place. Between 600 and 700 men are employed in the works.

The Pacific Railway of Colombia is intended to connect the port of Buenaventura, on the Pacific coast, with the fertile valley of the Cauca, and ultimately with Bogota. At present the line has been completed for a distance of 60 miles from the coast. For each mile of line constructed the company is entitled to a subsidy of about \$60,000 per mile from the Colombian government, which is liquidated by the payment to the company of 50 per cent. of the customs receipts of the ports of Buenaventura and Tumaco. The payments have been punctually made, but have not been equal to the full amount of the subsidy, so deferred customs bonds have been given to the company for the balance.

STEEL COACHES; BALTIMORE & OHIO.

The Baltimore & Ohio recently received 30 coaches from the American Car & Foundry Company, 20 smoking cars and 15 postal cars from the Pullman Company, and 10 baggage cars from the Barney & Smith Car Company. All of these are built entirely of steel, with the exception of the inside finish. The



Half Cross Section Through Steel Passenger Car; Baltimore & Ohio.

following description relates to the 70-ft. coaches, which have a seating capacity for 80 passengers. The construction of both the superstructure and the underframe represents the type of design which has been used by the American Car & Foundry Company

for a large amount of equipment. The illustration of the cross section of the car shows in detail the principal features of this design. The center sills are 2 ft. 5 3/8 in. deep at the center and are built up of a 1/4 in. steel web with a 4 in. x 6 in. x 1/2 in. angle at the top, one 3 in. x 4 in. and one 3 in. x 5 in. angle at the bottom, and the top cover plate 1/2 in. x 2 ft. 6 in. The side construction has a 1/8 in. steel plate extending from the window sill to the bottom of the side sill, with a 4 in. x 7/16 in. drop bar at the top, and a 4 in. x 6 in. x 1/2 in. angle at the bottom.

The steel side construction is shown in the vertical section as well as in the horizontal sectional views. The wood inside finish extends between the bulkheads; from these to the ends of the car the construction is steel. The upper and lower decks are lined entirely with fireproof Agasote, and the same material is used in the space under the windows behind the heater pipes, wood being used only in the panels between and above the windows and for the moldings. The floor is covered with Flexolith, making it dust and fireproof. The reason for making the ends of the coaches beyond the bulkheads of steel interior finish was to protect the passengers against any splinters of woodwork should



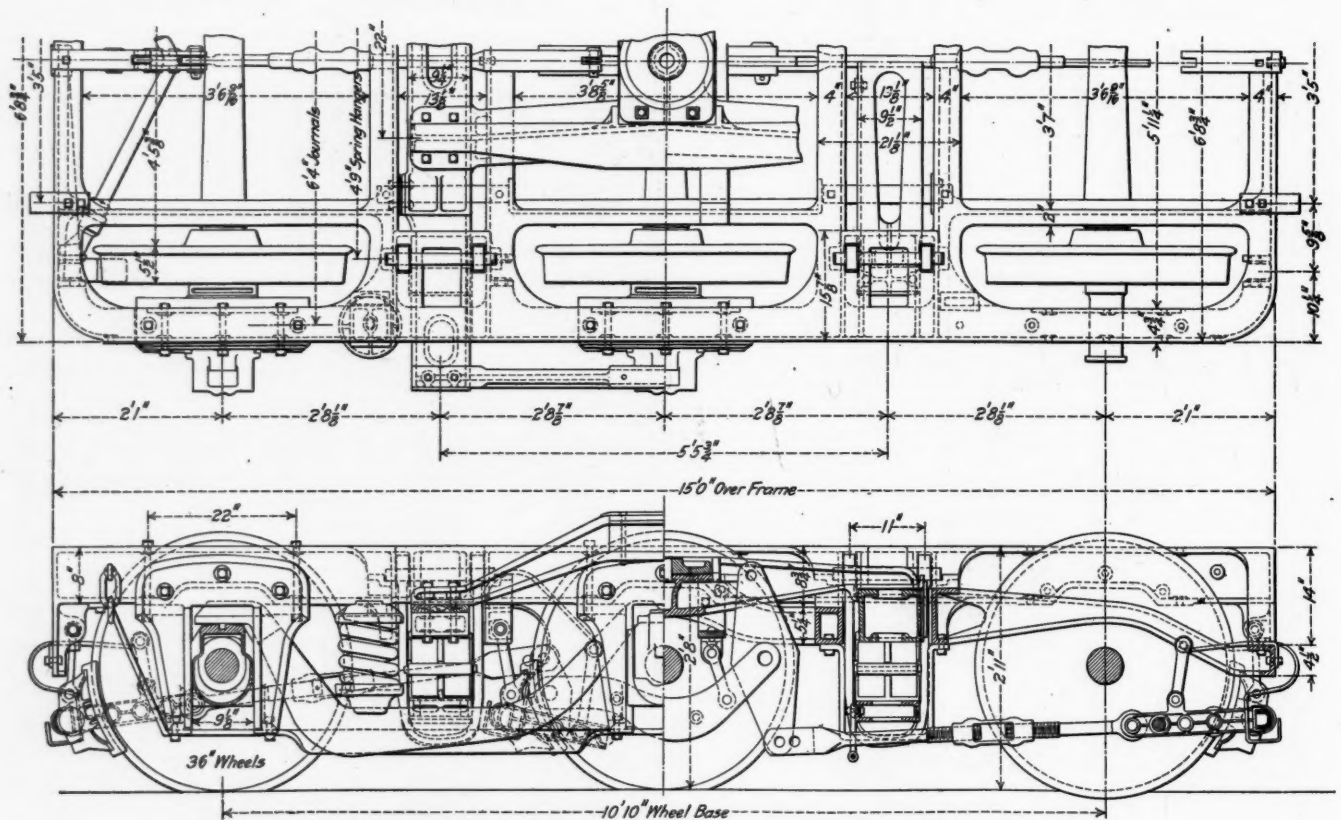
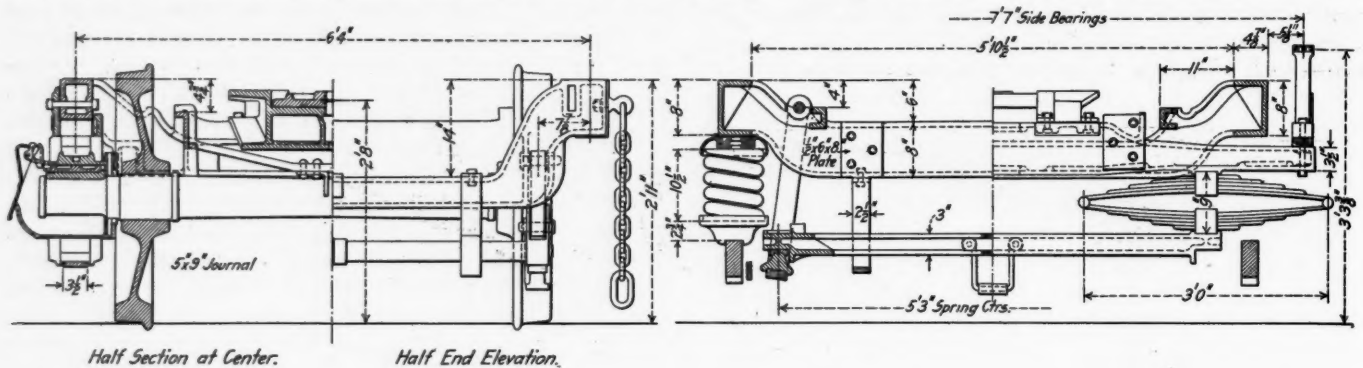
Interior of Steel Passenger Coach.

there be an accident of sufficient severity to distort the end of the car; in such a case the steel would bend and form a cushion for these shocks and thus protect the interior passenger compartment from damage. Furthermore, the metal used in the interior of the toilet rooms furnishes a more substantial and satisfactory finish from a sanitary standpoint. In the vestibule windows and end doors fire retarding wire glass is used. This will not shatter or fly about in case of accidents.

The outside walls of the car are insulated on the inside all around, including the inner side of the roof, with three-ply salamander hair felt insulation, and the inside finish of Agasote, wood and Flexolith provides a second insulation, which should help to make the car comfortable in both winter and summer. In planning these cars the platform has been made more roomy by increasing the length to 3 ft. This will facilitate the discharge of passengers. The cars are lighted both by electricity with the head end system and by Pintsch mantle lamps. Considerable study has been given to the lighting of the Baltimore & Ohio

cars, and the arrangement which had been developed for the old coaches was used for the new cars. The center lamp contains four electric bulbs and one mantle gas lamp, all enclosed within a satin bowl. This arrangement prevents the lamps which are un-

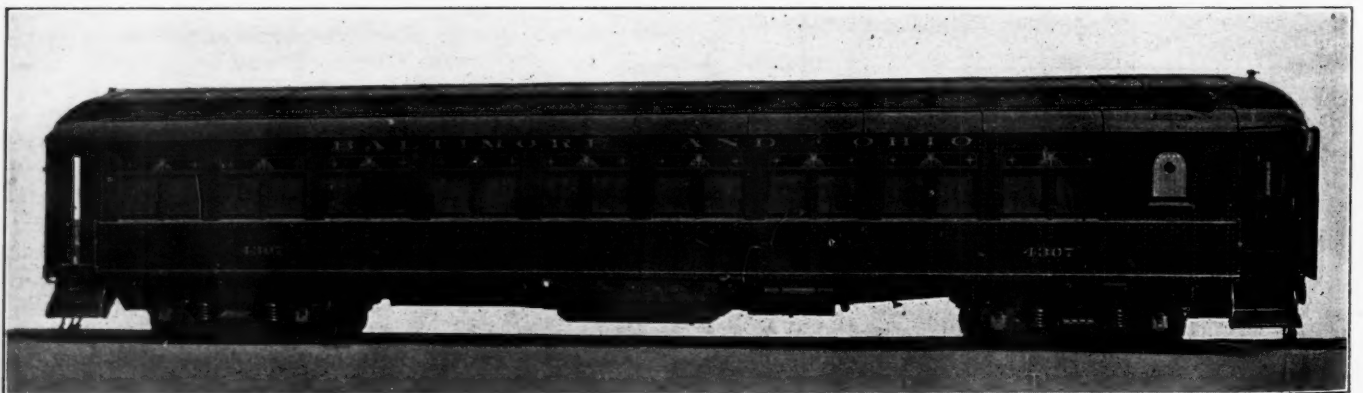
weather. The Gold system of steam heating is used. The 70-ft. coaches are equipped with 6-wheel trucks, having 36-in. solid steel wheels, axles with 5 in. x 9 in. journals and cast steel frames. The 60-ft. steel coaches have 4-wheel trucks.



Six-Wheel Truck for 70-Foot Steel Passenger Coach

lighted from showing, and also prevents either set of lamps from casting a shadow when the other is lighted. The cars are equipped with Hale & Kilburn seats covered with green plush and are supplied with electric fans at each end for use in warm

A bill recently introduced into the congress of Ecuador provides for the reorganization of the board in charge of the construction and administration of the railway from Ambata, Ecuador, construction and administration of the railway from Ambata, Ecuador,

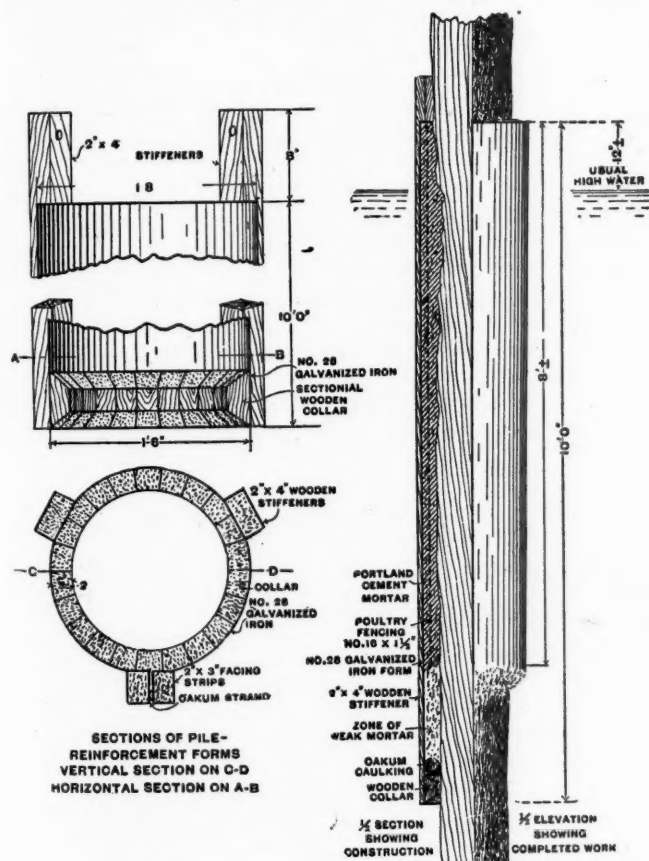


Seventy-Foot Steel Passenger Coach; Baltimore & Ohio.

NOTES ON PILE PROTECTION.

In a paper read before the Boston Society of Civil Engineers, which is printed in the Journal of the Association of Engineering Societies, T. Howard Barnes described some wharf construction for the Guatemala Railway Company in Puerto Barrios, Guatemala, in which it became necessary to deal with some creosoted southern United States piles which had been in place for about seventeen years. These piles were nearly all of them in fair condition, excepting at and near the water line, but at this belt for, say, 5 ft. in width, most of them were badly eaten, many having cavities extending completely through them, resulting from the combined activity of the teredo and the limnoria. The expense of replacing these piles with new ones would approximate \$50 each. The incentive for saving them by placing some reinforcement was so great that the writer gave much time to its consideration.

The first idea was to place such reinforcement by using a



Reinforcement of Old Creosoted Piles.

chamber clam-shell like, each half of which should have a semi-circular opening in the parting line of the bottom for embracing the pile when clamped about it, and which would admit a workman after unwatering the chamber, the annual space about the pile being first calked. A test chamber was made, but trials in controlling it against the effect of even a wind-chopped sea of moderate force proved the futility of rapid and economical manipulation, and the idea of working in the dry was abandoned. Had the apparatus proved successful it was proposed to place a reinforcement of nails, poultry netting and cement mortar, similar to that hereinafter described for protecting some of the piles which were placed in the new construction.

Accordingly, forms were prepared for placing in the wet about the old piles a reinforced cement-mortar envelope which should have a width of about 8 ft. and a minimum thickness of 2 in. These forms were made of No. 26 gage galvanized iron shaped into cylindrical shape with a slight taper and 10 ft. in length. A 2-in. x 3-in. strip of pine having a length of 8 in. greater

than the form was attached on each side of the parting line, which was up and down. The metal was folded about the strip 1 in. on to the 3-in. side, leaving 2 in. for attaching an oakum strand, which was needed to prevent egress of mortar. Two 2-in. x 4-in. stiffeners of same length as the facing strips were fastened to the form at one-third points as shown in the cut. A collar of 2-in. stock made from narrow blocks was provided at the foot to serve as a gage for regulating the thickness of the mortar, as well as serving to calk against in closing the foot against the escape of the mortar.

The mortar envelope was reinforced by a wrapping of poultry fencing of No. 16 gage with 1 1/2-in. mesh. The procedure was, first to scrape off the mussel growth on the pile to be treated. This growth forms a complete mat, but is detached quite readily. The poultry fencing was then put in place. This was made up into a roll, 8 ft. long, with sufficient fullness to lap on to itself several inches when placed about the pile. The form, nearly buoyant with the stiffeners, was then floated into place, first having been provided with a wreath of fluffy oakum affixed to the collar. The facing strips were closed tightly with carriage clamps hung from them by cords of such length that when the clamps were squared into horizontal position they were in the proper place for screwing up by the divers. The divers were naked, and their further duties were to close the bottom of the form effectually against the egress of the mortar, watching carefully that none escaped at the time of the filling. Steel bars 8 ft. long of 1/2-in. stock were hung, one in each of the three sections of the form. They had a shepherd's crook for support on the top edge of the form, and were used for slushing the mortar into compact state as it fills.

The mortar was made, one part cement to about two parts sand, the latter being silica and selected as coarse as possible, say 0.18 mm. effective size. It was assured that there was a little overfill of cement. The operation of filling was carried on rapidly, the effect of the slushing rods being supplemented by tapping with clubs on the stiffness, resulting in securing a sound mass excepting in the lower zone of about 18 in.

It will be noted that the forms were made 2 ft. longer than the reinforcement cage. The separating of the sand from the cement in the lower portion could not be avoided under the limitation of having to drop the mortar through so great a depth of water; accordingly the reinforcement was made to occupy only the sound part of the envelope.

Fig. 2 shows the construction and the finished appearance of the work. At the time of writing, the work is still in progress, with a record showing no failures. It should, however, be added that at times much delay is caused by difficulty in sealing the foot of the form. It is useless to place the mortar when any is escaping at the bottom.

The expense of this treatment is—labor (contract price), \$8; materials (cement, fencing, etc.), \$4; a total of \$12, to which should be added the expense of experimenting and overhead charges.

There seems good reason to expect a further life of the piles thus treated as great as that at present sustained.

PROTECTION OF PILES BEFORE DRIVING.

There was also used experimentally on some of the creosoted piles in new construction in the same work a reinforced mortar protection applied in the following manner: First, wire nails, about 12 d., were driven thickly over the protected zone for one-third their length, the zone being 10 ft. wide; next, the nails were bent over, using in this operation a short length of small iron pipe, which was not only expeditious but prevented the nail from making the angle close to the wood; a wrapping of poultry fencing of the before-described class was then attached; after which a coat of Portland cement plastering was applied, being thoroughly troweled in; this was about 3/4 in. thick and was treated when set by a grout wash of Portland cement mixed in a solution of water glass. The envelope was kept wet until well

set. In respect to the water glass it is too early to note its effect in resisting the action of sea water.

The driving of these piles showed the following features of interest, the hammer used being a regular drop-hammer weighing 2,500 lbs. Confining the drop to 4 ft., the envelope was nearly invariably kept intact; above this limit of drop the mortar was detached more or less, occurring nearly always at those places in the envelope where the fencing was in contact with the wood; the mortar was also weakened and became detached through the influence of the creosote which had cooked out of the pile and permeated the mortar as it lay in the yard exposed to the direct sun rays.

The cost of this form of protection was, labor (contract), \$1.20; materials, about \$2.50; a total of \$3.70, exclusive of overhead charges. It must also be observed that the handling cost in placing the piles in the yard in position to be treated was additional and amounted to a considerable item. This expense applied of course in the case of any desired treatment, such as copping, etc. More care in dragging out the above-described piles over the ground from the yard was actually required than in the case of those protected with copper yellow-metal. The expense of yellow-metal covering in 20-oz. weight was three times that of the mortar protection.

If the netting be placed so as to be free from contact with the wood, leaving a clear space of about $\frac{1}{4}$ in. for the mortar to enter and get a grip of the wire, ordinary handling with careful driving will not injure the envelope; certainly the use of a steam hammer would insure entire freedom from damage in driving. When applied to creosoted piles there should be maintained a shade to prevent the exuding otherwise of a serious amount of creosote under the heat of the direct sun rays.

It may anticipate some reader's query, "How do you account for the confining of the activity of the sea pests to so narrow a belt?" to remark that the clearness of the water seems to govern the activity of the teredo and of the limnoria. The Puerto Barrios harbor bottom is a mineral ooze, very easily stirred up. Other localities, like Port Limon in Costa Rica, where the limnoria has been active enough at depths of 25 ft. to eat off creosoted piles in seven years, having clear water to the bottom, show an activity of the borers, which, while greatest at the water line, extends to the ground.

Local conditions of murkiness of water may account for curious differences of such activity in neighboring wharves which the writer has had cited to him as occurring in our northern waters.

RAILWAYS IN GERMAN EAST AFRICA.

The development of the German East African protectorate depends for its success on the construction of railways. This fact is being constantly brought to the minds of the imperial legislators and the German public in general by the Colonial Development Committee, which of late has paid considerable attention to the railway policy of German East Africa.

The extension of the East African Central Railway from Tabora to Ujiji is demanded by this committee because the development of the protectorate in question has in the last few years made remarkable progress, which is partly due to the natural advantages, partly to the introduction of improved methods of communication.

According to the report of 1908 concerning the extension of the line from Dar-es-Salam and Monogoro to Tabora, the annual receipts of the protectorate in the years 1902-1907, inclusive, increased on an average to \$142,380. Considering the years 1908 and 1909 also, the average annual increase in receipts is about \$155,952. More distant districts of the German colonies—the most thickly populated and the most favored by nature—have up to the present been but poorly developed and but partly opened up. Only an extended railway system can make use of the natural advantages and the human material of

the colony, and at the same time benefit the home industries.

This is especially true of the western part of German East Africa—the district of the great lakes. Towards this region the Central railway has been more rapidly extended than was at first intended; it will reach Tabora next year. No one who knows the conditions can doubt that this railway must be built as far as the lake Tanganyika, because that will be the only way not only to make it pay, but also to bring the western part of the colony under proper control and make it productive. It is no longer a question of the necessity of the railway extension, but only of the time when the extension must be begun. Arrangements must be made very soon for its extension so that the work shall not be broken off at Tabora. It would be a waste of time, which would not be justified by the conditions, if the already existing organization were laid off on reaching Tabora, only to be taken up again sooner or later. Experience shows that the beginning of any such new undertaking is the most expensive portion. The officials who are at present at work and have got fairly "in the saddle," as it were, would have to be replaced by others who would buy their experience dearly. If the work were broken off on reaching Tabora, it would not only be more expensive, but also would take more time on resuming, after an interim of inaction.

But not only for economical reasons must the extension of the line be undertaken at once, but also to prevent commerce and traffic from being transferred from the western part of the colony in question to the Belgian Congo. By reason of the discovery of ore and the newly introduced free trading and mining laws, the Congo became so much more important that the Belgians are going ahead vigorously with the construction of their own railway. If with their Lukuga railway they reach Lake Tanganyika sooner than the Germans, it will be a great disadvantage to the latter. On the other hand, the Germans by reaching the lake first with their Central railway would gain a big share of the ever increasing traffic of the opposite shore of that lake.

Before all, therefore, it is necessary that the railway be pushed to a conclusion in order to prevent loss and to secure to the country the advantages above named—which would in a very short time cover the comparatively slight expense of finishing the work already begun.

As regards the preparatory work on the Northern Railway from Moshi to Lake Victoria, the committee reports that in a few months this railway will have reached Moshi, and the foot of Mount Kilimanjaro. It is absolutely necessary to undertake at once the surveys of the extension of the line from Moshi to Lake Victoria in order to avail oneself of the surveying force already on hand, and thereby effect considerable saving in this matter, and also to get at the probable cost, and be able to show thorough data concerning the necessary capital which must be secured at an early date. For the necessity of the extension of the line to Lake Victoria there are many reasons. The extensive elevated plateau offers unusual advantages for settling by the whites and for cattle raising. The soda lake, which would be so important for the German soap making and glass making industries could, according to the statements of the experts, be profitably worked, if the railway freight rate from the lake to Tanga did not exceed \$2.38 per ton. At present the traffic of the district bordering Lake Victoria goes over the English Uganda railway and the profit on thousands of tons of products from their own districts is lost to the Germans. Their railway would, however, they say, offer the most direct and the most favorable route.

The port of Tanga, the facilities of which, when it is completed in 1912, will be at least as good as those of the present English port of Mombassa, will be ready to take care of the traffic of the proposed railway extension; and to open up to traffic with the rest of the world the thickly populated northern districts of the colony.

General News Section.

The New York, New Haven & Hartford has made a five year contract for coal with the Coastwise Transportation Company as carrier and the Virginia Iron, Coal and Coke Company.

A new speed record for the Galena division of the Chicago & North Western was made on December 22, when a special train of four steel cars was run from Chicago to Clinton, Ia., 138 miles, in 136 minutes.

The east and west headings of the Big Savage tunnel on the Western Maryland's extension to Pittsburgh were connected this week. This tunnel when finished will be 3,275 feet long. It is now expected that tracks can be laid, so that the new line can be opened shortly after February 1.

The Southern Pacific has established at Oakland Mole, Cal., a model kitchen, in charge of Ernest Hausslein, in which the cooks of the company's dining cars are to be educated to the highest possible skill and efficiency; Mr. Hausslein is to teach the cooks the "few things they do not already know."

According to a Pittsburgh despatch, the Rail & River Coal Company's mines have been bought by the Grand Trunk Railway, which will operate them to supply its own fuel. The sale includes 31,000 acres in Belmont County, Ohio. There are six mines in operation, with an output of 750,000 tons a year.

In accordance with the plenary powers granted the California Legislature by the constitutional amendments, ratified at a special election in October (*Railway Age Gazette*, October 20, page 775), the railroad commission act, repealing the railroad commission law, passed at the last regular session of the legislature has been approved by the legislature at the special session recently called by the governor. The law creates a commission of five members and defines its powers, and these powers are extended over all public utilities in the state. The provisions of the bill were summarized in our issue of December 15, page 1243.

The United States Steel Corporation has made its annual distribution to employees under its bonus plan, which has been in force nine years. The amount distributed for 1911 is \$1,450,000. The corporation will also offer to its employees the right to subscribe to about 25,000 shares of stock. The price has not yet been fixed, but it will probably be a little lower than the market. The bonus is smaller than that for last year and for those of 1909 and 1908. In 1910 \$2,700,000 was distributed, in 1909, \$2,000,000, and in 1908 \$1,500,000. Last year three-fifths of the gift was in Steel common, valued at a price of 70. In 1909 two-fifths was in securities, common and preferred, with the common rated at 90 and the preferred at 124. In 1908 half of the bonus was represented by common at 50. Rights are usually given to employees for subscription at a little below the contemporary market quotation. Steel common closed Wednesday at 68. Between 25,000 and 30,000 employees of the Steel Corporation are stockholders. Since 1903 they have subscribed for 237,632 shares of preferred and 44,437 shares of common. Including this year's allowance of 25,000 shares employees will own stocks with a par value of over \$30,000,000.

Government Regulations for Transportation of Dangerous Articles.

The Interstate Commerce Commission, in a pamphlet of 93 pages, has issued the regulations for the transportation of explosives and other dangerous articles, by freight and by express, as revised since the negotiations and hearings which were held a few months ago; and the new rules are to go into effect March 31 next. The rules are now contained under three heads: Regulations for the Transportation of Explosives by Freight; Regulations for the Transportation of Dangerous Articles Other Than Explosives by Freight; and regulations for both kinds by express. The rules dealing with explosives were first prescribed by the commission about two years ago, these being about the same as those which had been prescribed (but without the specific sanction of a statute) by the railways themselves. These rules have now been revised. The rules for the transportation of other dangerous articles, such as acids, inflammable liquids,

etc., which likewise were prepared originally by the railways, have been adopted by the commission, following conferences and hearings, as a governmental regulation, under section 15 of the interstate commerce law, which confers on the commission general authority to regulate the "practices" of carriers in connection with the transportation of merchandise. The adoption of a governmental code for express companies is based on the same authority.

New Telephone Lines.

The Central of Georgia has ordered from the Western Electric Company telephone equipment for a line from Columbus to Birmingham, 160 miles.

The Wheeling & Lake Erie is to introduce telephones for train despatching on its line from Canton, Ohio, to Terminal Junction, 88 miles; from Warrenton to Mingo Junction, 10 miles; and from Adena to Neff, 20 miles; and will use Sandwich selectors.

The Lake Shore & Michigan Southern has ordered from the Western Electric Company 55 selectors and other apparatus for the equipment of message telephone circuits between Toledo and Elkhart and between Jackson and Fort Wayne; an aggregate length of line of 245 miles.

The Chesapeake & Ohio has ordered from the United States Electric Company, New York City, 52 Gill selectors for its telephone train despatching circuits. This will make about 250 Gill selectors in use on the C. & O. The Central Vermont has given a similar order for 31 selectors, and the New Iberia & Northern is also extending its telephone circuits in the same manner.

The Buffalo, Rochester & Pittsburgh is to introduce telephones for train despatching on its line from Rochester to East Salamanca, 110 miles, and from East Salamanca to Buffalo, 65 miles, the apparatus to be furnished by the Western Electric Company. At each of twenty way-stations there will be a box outside the building containing the necessary apparatus to enable a conductor to make connections with the telephone at night when the operator is not on duty; and all trains are to carry portable telephone sets to enable this to be done, thus giving to all trains the means of connecting with the despatcher at any time.

The Canadian Pacific has rearranged its telephone despatching lines so as to have one circuit from St. John, N. B., to Vanceboro, and one from Vanceboro to Megantic. During the summer, when business was light, these two lines were worked as a single circuit and during the readjustment, which took two days, the despatchers used the Morse telegraph. From this incident arose a report, published in the newspapers, that the telephones had been found unsatisfactory and would be discarded. An officer of the road informs us that the telephone line has been a complete success in all respects; he says, moreover, that "no road should be without the telephone system of train despatching." The despatchers can do a third more work. The Gill selectors are used on these lines.

New Railway in Colombia.

The Great Northern Central line, Colombia, which starts from Puerto Wilches, on the Magdalena river, and extends toward Bucaramanga, is now under construction. Sixteen miles of track have already been laid; 46 miles run through swampy land and 220 miles through mountainous and rocky territory. The approximate cut and fill per mile is 16,000 cu. yds., the maximum grade is 2 per cent., and the minimum curve radius is a little over 100 yds. More rolling stock will probably be ordered during 1912. This line will carry coffee, tobacco, asphalt, petroleum, cereals, timber, sugar, minerals and cattle. T. P. Gaskell, 130 Dashwood House, London, England, is chairman of the board of directors, and J. Fletcher Toomer, Puerto Wilches, is general manager, chief engineer and one of the directors.

Standard Locomotive Performance Sheet.

Included in the papers for the fourth annual convention of the International Railway Fuel Association will be one on a Standard Locomotive Fuel Performance Sheet, by Robert Collett, superintendent locomotive fuel service, Frisco Lines, Springfield, Mo. In order to facilitate preparation of this paper, Mr. Collett has sent out a circular requesting answer to the questions listed below:

1. Does your company make up a fuel performance sheet? If so, what is the nature of it—daily or monthly, or both?
2. If a performance sheet is kept, is it an individual engine or engineer's record of fuel consumed?
3. Which of the two methods do you prefer and should it in your opinion be a daily or monthly record? Give reasons.
4. What is your opinion with reference to separating charges for fuel used at terminals from that used on the trip?
5. What methods are used to interest enginemen in their fuel performance?
6. Please give your opinion or experience with weighing devices and coal chutes and whether or not you consider it advisable to incur the expense of installing scales at mechanical chutes and incurring extra help needed at mechanical chutes.
7. What methods do you recommend for taking care of the shortage between coal chute measurements and billed weights?

Transportation Club of Buffalo.

George W. Smith, traffic representative of the Lackawanna Steel Company, has been elected president of the Transportation Club of Buffalo, at Buffalo, N. Y. Mr. Smith was for two years president of the Central Railway Club. He is still a member of the executive committee of the Central Railway Club, and will continue in that capacity for another year.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.; annual, May 7-10, Richmond, Va.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York; next convention, Seattle, Wash.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill.; annual, June 18-21, Chicago.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—O. G. Fetter, Carew building, Cincinnati, Ohio; 3d Friday of March and September; annual, March 17, Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—George Keegan, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, 3d week in Oct., Baltimore, Md.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, Monadnock Block, Chicago; annual convention, March 19-21, 1912, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOC.—J. W. Taylor, Old Colony building, Chicago. Convention, June 17-19, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—M. H. Bray, N. Y., N. H. & H., New Haven, Conn.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 13 Park Row, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; annual, June 26, 1912, Quebec, Que.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago; annual convention, May 22, 1912, Los Angeles, Cal.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreuccetti, C. & N. W. Ry., Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 135 Adams St., Chicago; annual, June 24, 1912, New York.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conrad, 75 Church St., New York.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—D. F. Jurgensen, 116 Winter St., St. Paul, Minn.; 2d Monday, except June, July and Aug., St. Paul.

ENGINEERS SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va.; annual, May 15, Buffalo, N. Y.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. B. Sebastian, La Salle St. Station, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, Brown Marx building, Birmingham, Ala.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Convention, August 15, Chicago.

IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August, Des Moines.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York; annual convention, May 14-17, Pittsburgh, Pa.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Annual convention, June 12-14, Atlantic City, N. J.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Convention, 2d week in September.

NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NORTHERN RAILWAY CLUB.—C. L. Kennedy, C., M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

OMAHA RAILWAY CLUB.—H. H. Maulick, Barker Block, Omaha, Neb.; second Wednesday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.; annual, May 12, 1912, Kansas City, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver Bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. assocs.

RAILWAY TEL. & TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling; September, 1912, Buffalo, N. Y.

ST. LOUIS RAILWAY CLUB.—B. W. Fraumenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 18, 1912, Louisville, Ky.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Dertoit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.; August, 1912.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Wednesday in month except July and August, Chicago.

WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md.; annual, January 16-18, Chicago.

Traffic News.

The number of emigrants arriving at the port of New York during the present year is expected to total not over 800,000, probably 30 per cent. less than the number arriving in 1910.

It is expected that the coal tonnage from the southern West Virginia coal fields of the Norfolk & Western will total 19,000,000 tons for 1911. The tonnage for the 11 months was over 200,000 tons more than the corresponding 11 months of 1910.

A movement has been instituted by the executive committee of the National Industrial Traffic League to ascertain the sentiment of its membership and shippers in general on the question of Panama canal tolls. A committee appointed for the purpose has addressed to the members a series of questions bearing on the subject.

The merchants of Spokane, Wash., at a recent meeting decided to raise a fund of \$50,000 to continue the campaign for reduced freight rates to Spokane, and it is reported that their intention is to place the routing of freight shipments in the hands of one man to be turned over to a single railway in an effort to secure concessions by boycotting the other lines.

All railways and express companies doing business in that part of Oklahoma which was formerly the Indian territory, have ordered agents to accept no intoxicating liquors for shipment into that territory. This order follows a decision by the United States Circuit Court of Appeals, in a case against the United States Express Company brought by a liquor dealer at Fort Smith, Ark., in which it is held that the former prohibition of the old federal statutes is still in force, and will remain so until the expiration of a period of 21 years specified in the law.

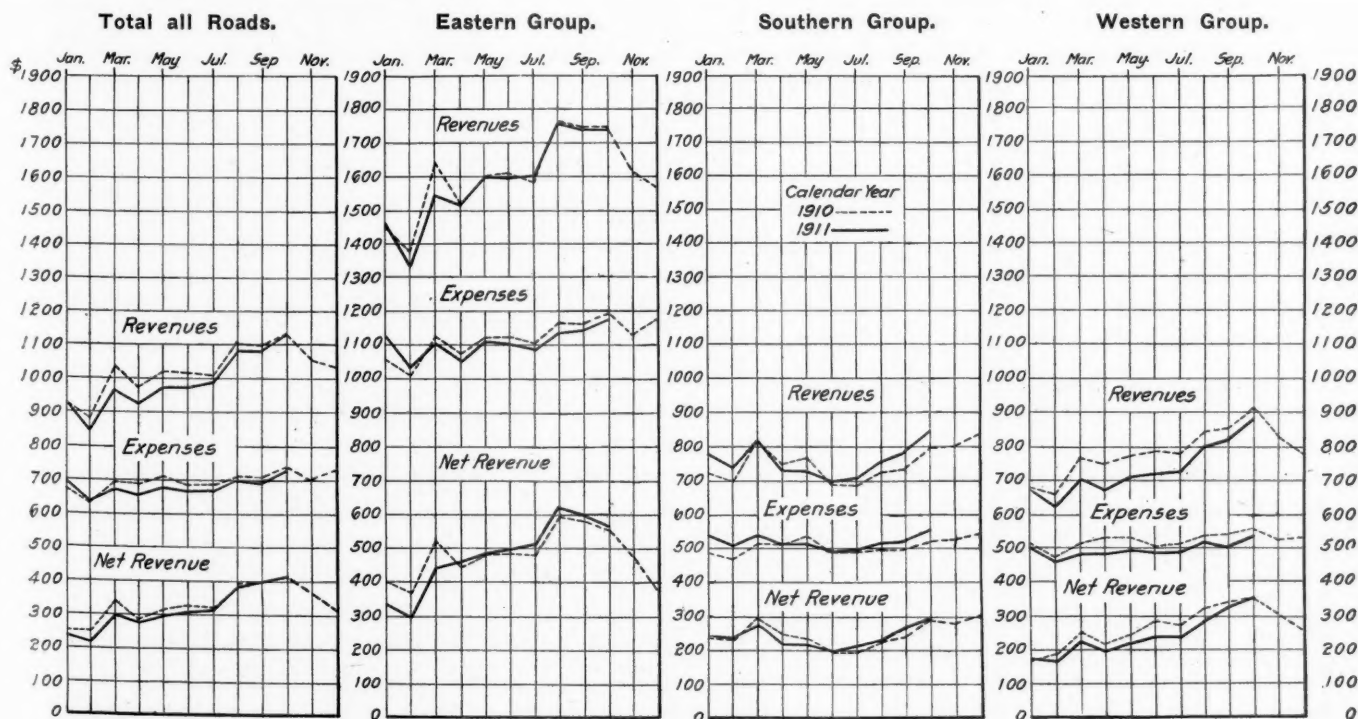
The United States Circuit Court at New York City has refused the petition of the *Review of Reviews*, in which the court was asked to issue a temporary injunction restraining the postmaster-general from forwarding that magazine by freight trains, the claim of the publisher being that in sending his monthly magazine by freight, while weekly magazines, active as competitors of the monthly, are sent by fast passenger trains, the government practices discrimination. The court held that the postmaster-general could rightfully send the mails by any conveyance deemed by him suitable, provided he delivered the mail matter at destination in accordance with the law.

The Florida East Coast has petitioned the Commerce Court to enjoin the Interstate Commerce Commission from making effective an order reducing freight rates on citrus fruits and vegetables. The commission was served with notice to show cause in three days why a temporary injunction should not be issued pending final hearing of the case. The commission on November 6 ordered the railways to reduce rates by January 2. The petition now presented sets forth that on account of this proposed reduction, the increases in wages and expenditures for extensions, it will face a deficit; and that the decreases ordered are unreasonable. It is asserted that the decreases will cause a loss of revenue of \$130,000 a year.

B. F. Yoakum, of the St. Louis & San Francisco, is quoted as saying: "On our three-hundred-mile Brownsville line one day last week there were 153 immigrant outfits. Not only are people coming to the Southwest, but virgin land with twenty feet of soil, speaking generally, is being ploughed. The needs arising from this southwestern development are, of course, bringing larger business, and, of course, are having some effect upon the price of land. The fruit and vegetable products of these districts can be delivered and disposed of with a profit in St. Louis, Chicago, Minneapolis and St. Paul as readily as products may be brought from our southern states to New York and New England markets. Normal requirements from these growing sections without the benefit of business expansion guarantee as large a degree of business in the next twelve months as at present."

Total Monthly Earnings and Expenses.

Bulletin Number 26 of the Bureau of Railway Economics giving a summary of revenues and expenses of steam roads in the United States for the month of October, 1911, says: The railways whose returns are included in this bulletin operate 223,227 miles of line, or about 91 per cent. of all the steam railway mileage in the United States. The total operating revenues for the month of October, 1911, amounted to \$252,274,379. Compared with October, 1910, the total operating revenues of these railways show an increase of \$1,338,557. That this increase was due exclusively to the increase in mileage of these roads in 1911, as compared with 1910, is proved by the fact that when reduced to a per mile basis for the two years total operating revenues show a decrease. Thus total operating revenues per mile of line amounted to \$1,130 in October, 1911, and \$1,138 in October 1910, a decrease for 1911 of .8, or 0.7 per cent. The table shows that this decrease in operating revenues resulted



Monthly Revenues and Expenses of Railways per Mile.

from decreases both in freight and in passenger revenues.

Operating expenses amounted to \$161,405,726. This was \$646,326 less than for October, 1910. Operating expenses per mile amounted to \$723, compared with \$735 in October, 1910. This represents a decrease of \$12 per mile, or 1.6 per cent., which was due to decreases in all the primary operating expense accounts except traffic expenses. In the cost of maintaining way and structures, there was a decrease compared with October, 1910, of \$4 per mile, or 2.4 per cent.; in the cost of maintaining equipment a decrease of \$3 per mile, or 1.9 per cent.; in the cost of conducting transportation a decrease of \$5 per mile, or 1.4 per cent.; general expenses showed a slight decrease per mile.

Net operating revenue shows an increase as compared with October, 1910, of \$4 per mile, or 1.0 per cent. By thus cutting down operating expenses the railways were able to overcome the decrease of \$8 per mile in operating revenues. The net revenue for each mile of line for each day of October averaged \$13.13, as compared with \$13 for October, 1910.

Taxes for the month of October amounted to \$9,694,033, or \$43 per mile, an increase of 12.8 per cent. over October, 1910.

The operating ratio for October, that is, the per cent. of total operating revenues which was absorbed in operating expenses, was 63.9 per cent., as compared with 63.8 per cent. in September, 1911, and 64.6 per cent. in October, 1910.

The eastern group of railways shows a decrease in total operating revenues per mile as compared with October, 1910, of 0.4 per cent., and the western group a decrease of 2.7 per cent., while the operating revenues per mile of the southern group increased 5.7 per cent. over October, 1910. Operating expenses per mile decreased 1.5 per cent. on the eastern railways as compared with October, 1910, and on the western railways 4.2 per cent., but increased on the southern railways 7.1 per cent. All the primary operating expense accounts of the eastern and western groups of railways decreased as compared with October, 1910, save only the less important accounts of general expenses in the East and traffic expenses in the West. The southern railways, on the other hand, show an increase in every primary expense account. Net operating revenue per mile in the eastern group increased 2.0 per cent. as compared with October, 1910, that of the southern group increased 3.1 per cent., while that of the western group declined 0.3 per cent. Taxes increased in all the groups as compared with October, 1910, the increase per mile amounting to 16.2 per cent. in the eastern group, 10.2 per cent. in the western group, and 8.2 per cent. in the southern group.

When the returns for the ten months of the calendar year 1911 are compared with those of the corresponding months of 1910, they show decreases in total operating revenues per mile of 2.9 per cent., and in net operating revenue per mile of 4.7 per cent. There were decreases in net operating revenue of 1.7 per cent. in the eastern group, and 8.8 per cent. in the western group, while the southern group shows the slight increase of 0.2 per cent. for the period.

Comparison of the returns for the four months of the fiscal year 1912 with those of the corresponding months of the fiscal year 1911 shows a decrease in total operating revenues per mile of 1.5 per cent., and in net operating revenue per mile of 0.5 per cent. The considerable decrease of 6.5 per cent. in the net operating revenue per mile of the western group contrasts with increases of 4.0 per cent. in the eastern group and 6.5 per cent. in the southern group.

INTERSTATE COMMERCE COMMISSION.

The commission has suspended, until April 20, tariffs filed by the Rock Island, showing increased rates on grain.

The commission has decided to permit the advances in rates on wagons and vehicles from Suffolk, Va., to points in North and South Carolina. (22 I. C. C., 124.)

Rates on Fire Brick Reduced.

T. N. Atchison v. the St. Louis, Iron Mountain & Southern et al. Opinion by the commission.

The rates on fire brick from Perla to Shreveport and other Louisiana points found to be unreasonable. (22 I. C. C., 131.)

Reparation Awarded.

Diamond Coal & Coke Co. v. Baltimore & Ohio. Opinion by the commission.

Rates on mining car wheels from Rock Island, Ill., to Diamondville, Wyo., should be the same as rates on mining cars. (22 I. C. C., 129.)

Rate on Brimstone Reasonable.

McLaughlin, Gormley, King Co., v. the Maine Steamship Company et al. Opinion by the commission.

The sixth-class rate of 35 cents per hundred pounds on brimstone from New York to Minneapolis via Portland, Me., is found to be not unreasonable. (22 I. C. C., 108.)

Refusal to Equalize Tacoma and Portland.

Carstens Packing Co. v. Oregon & Washington Railroad et al. Opinion by the commission.

The complaint is as to the relation between rates on live stock and on packing-house products from Portland, Ore., to Tacoma, Wash., and Seattle. The whole record in the case makes the conclusion inevitable that the complainant is seeking to have the commission equalize Tacoma and Seattle with Portland as a slaughtering center. Doubtless due to their natural location, Portland has certain advantages as a live-stock market, and the testimony is that the prevailing prices of live stock are somewhat lower there than at the cities on the Sound. The record does not show that this condition is due to any unjust arrangement of rates, and it is well settled that it is not the function of the commission to equalize communities in matters of this character. The complaint is therefore dismissed. (22 I. C. C., 77.)

Rates on Wagons Reduced.

Milburn Wagon Co. v. Lake Shore & Michigan Southern et al. Opinion by Commissioner Clark.

The complaint is against the rate under official classification on wagons and other vehicles from Toledo, Ohio, to Ohio river crossings and Virginia cities. The complainant's difficulties arise from the differences between the official and southern classifications and from the fact that there are no proportional rates on wagons in effect from Toledo. The adjustment rate from Toledo as compared with Chicago is plainly unjust discrimination. The commission inquires whether this complaint shall wait indefinitely for reasonable rates which are withheld because of the inability of the railways to agree on how they will divide the earnings. The fact that the reduction of an unreasonable rate or the correction of an unjust discrimination will require reductions or corrections at other points cannot be accepted as a valid defense for an unreasonable rate. Not only are rates reduced but reparation is awarded on previous shipments. (22 I. C. C., 93.)

Cement Rates Equalized by Advancing Rates.

Elk Cement & Lime Co. v. the Baltimore & Ohio et al. Opinion by Commissioner McChord.

The defendants are parties to joint through rates on cement from the Lehigh Valley district mills in eastern Pennsylvania and western New Jersey to Detroit and other points in Central Freight Association territory, and the rates from these points are on a lower mileage basis than the rates from Detroit and other points to competitive points. The present relative rates allow the cement manufacturers of the Lehigh Valley district to "dump" their surplus stocks on the market at Detroit, while at the same time preventing the Detroit manufacturers from competing with Lehigh Valley manufacturers in points in Central Freight Association territory equidistant from the Lehigh Valley district and Detroit. (22 I. C. C., 84.)

In re suspension of advances in rates on cement originating in Central Freight Association territory. Opinion by Commissioner McChord.

The commission suspended for investigation tariffs carrying advances in rates on cement in carload lots from Michigan, Indiana, Ohio and other points to Detroit. In the Elk cement case above it was found that the rate into Detroit as compared with the rate from Detroit to other points was too low, and the present investigation shows that the railways have sustained

the burden of proof in showing that the advanced rates asked for are reasonable. The advances are therefore permitted. (22 I. C. C., 90.)

The Commission's Power to Equalize Markets Defined.

Ashland Fire Brick Co. et al. v. Southern Railway et al. Opinion by Commissioner Lane:

Complaint urges that rates on brick from kilns on or near the Ohio river to Birmingham and other southern cities are unreasonable as compared with the rates on brick from St. Louis, Mo., to the same destinations. While it is true that the commission has held that where joint or proportional rates are made by all the carriers to certain points of destination it is within its power to end a discrimination as between points of origin by a reduction in their rate from a certain point that is discriminated against, yet this principle only has application where the traffic from both groups of origin is necessarily transported to destination by the same connecting carriers and where it is possible for the delivering carriers to put an end to the discrimination by the exercise of their power to refuse to enter into preferential joint or proportional rates.

Power has not been lodged with this tribunal to equalize economic advantages, to place one market in competition with another, or to treat all railways as part of one great whole, apportion to each a certain territory, or to require all to meet upon a common basis at all points. As to the charges of undue preference or unjust discrimination made against defendants the commission can not find that they are guilty in this instance.

As to Ironton, Ohio, Portsmouth and Oak Hill no order will be entered; but the present rates on brick from Haldeman, Ky., Hayward, Ashland, Taylors and Olive Hill to all points of destination involved found to be unreasonable, and reasonable rates prescribed for the future. (22 I. C. C., 115.)

STATE COMMISSIONS.

The Illinois railway commission at its January meeting will consider an application of the Illinois freight committee for the establishment of specific ratings on aeroplanes.

The Indiana State Railroad Commission has ruled that when a railway gives in writing a freight rate lower than the tariff, the consignee can hold the company to the figures given. On the other hand, if a rate should be quoted in writing higher than the published tariff, only the published rate can be collected. To the irreverent this will sound like "heads I win, tails you lose." The federal rule is that in either case the tariff rate must prevail, even if the carrier finds himself obliged to sue for a part of the money.

The Pennsylvania Company has agreed to a rule promulgated by the state railroad commission of Indiana that when a conductor or engineman has to run over a division which he has not traversed for sixty days, he shall make a trip of inspection over the division before taking charge of a train or engine. Also, that in case a main track is temporarily unfit for regular speed, trainmen shall be notified of the condition of the track by some means better than a general order; train orders should be used. These requirements evidently have been brought about as a result of the investigation of the recent derailment at Fort Wayne.

COURT NEWS.

The United States Circuit Court at San Francisco on application of the Southern Pacific has temporarily enjoined the enforcement of the order of the California railway commission reducing rates between San Pedro harbor and the city of Los Angeles proper.

Engineers who have studied the problem of substituting electricity for steam on the Gotthard Railway report that with traffic no greater than it was in 1904, electricity would cost a little more than steam, but with the traffic grown as it may be expected to by the time the substitution can be effected, electricity will be 25 per cent. cheaper.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

J. Taney Willcox, assistant to the secretary of the Pennsylvania Railroad at Philadelphia, Pa., has been appointed assistant secretary, with office at Philadelphia, succeeding K. S. Green, resigned.

O. L. Dickson, vice-president and general manager of the White Pass & Yukon Route, has been elected president, with office at Vancouver, British Columbia, succeeding S. H. Graves, deceased. A photograph of Mr. Dickson and a sketch of his railway career were published in the *Railway Age Gazette* of April 28, 1911, page 1013.

L. E. Katzenbach, assistant secretary of the Chicago, Burlington & Quincy, and assistant secretary and assistant treasurer of the Colorado & Southern at New York, has been appointed also secretary and assistant treasurer of the Great Northern, succeeding Edward Sawyer, who has had his office at St. Paul, Minn., and who has been retired.

William Ellis, commerce counsel of the Chicago, Milwaukee & St. Paul at Chicago, has resigned, effective January 1, to become the publisher of "The Searchlight," at Gray's Lake, Ill., a monthly publication to be devoted to the discussion of commercial and corporate affairs in their relations to the so-called reform and insurgent movement. O. W. Dynes, assistant general solicitor, has been appointed commerce counsel to succeed Mr. Ellis.

Francis I. Gowen, who has been appointed general counsel of the Pennsylvania Railroad, with office at Philadelphia, Pa., as has been announced in these columns, was born at Germantown, Philadelphia, on August 17, 1855, and was educated at the school of Dr. John W. Fairies, preparatory to a course at the University of Pennsylvania. He was admitted to the bar in 1877, and in December, 1902, was appointed general solicitor of the Pennsylvania Railroad. While engaged in general law practice, Mr. Gowen was for several years connected with the legal department of the Lehigh Valley as Philadelphia counsel. He also served as assistant general solicitor of the Philadelphia & Reading for a short period.

George Stuart Patterson, whose appointment as general solicitor of the Pennsylvania Railroad with office at Philadelphia, Pa., has been announced in these columns, was born on December 10, 1868, at Philadelphia, Pa. He graduated from the Germantown Academy in 1884, spent two years at Haverford College, and two years in the academic department of the University of Pennsylvania, from which he graduated in 1888. After three years in the law department of the University of Pennsylvania, he graduated from that institution in 1891. Mr. Patterson entered the service of the Pennsylvania Railroad on February 1, 1900, as assistant solicitor, which position he held until December, 1902, when he became assistant general solicitor. Upon the later reorganization of the company's legal department in November, 1907, Mr. Patterson became assistant general counsel. At his graduation from the department of law of the University of Pennsylvania, Mr. Patterson was elected a Fellow of the Department of Law, and in 1892 he was elected Professor of Law, which chair he still holds.

Operating Officers.

F. A. Huber has been appointed car service agent of the Bessemer & Lake Erie, with office at Greenville, Pa.

R. H. Hunter has been appointed acting assistant superintendent on the Idaho division of the Oregon Short Line, with office at Pocatello, Idaho.

M. Sheehan has been appointed trainmaster of the New Orleans, Texas & Mexico, the Beaumont, Sour Lake & Western, and the Orange & Northwestern, with office at DeQuincy, La.

D. F. Bucher, superintendent of the National Railways of Mexico at Chihuahua, Mex., has been appointed superintendent

of the Mexico North Western, with office at Madera, Chihuahua. E. A. Dewey, who has been superintendent at Madera, will be assistant superintendent at that place; and George Rutledge, who has been superintendent at Ciudad Juarez, Chihuahua, will have the title assistant superintendent at that place.

James Buckelew, superintendent of the Allegheny division of the Pennsylvania Railroad at Oil City, Pa., has been appointed superintendent of the Camden (N. J.) terminal. The Amboy and Belvidere divisions have been combined to form the Trenton division, with Victor Wiernian superintendent, with headquarters at Camden, N. J. A. P. Gest, superintendent of the Belvidere division, has been appointed special agent of the New Jersey division. The New York Terminal division and the Hudson division have been combined to form the Manhattan division, with C. S. Krick as superintendent; and A. M. Parker, superintendent of the Hudson division, has been appointed superintendent of the Allegheny division.

C. C. Riley, whose appointment as assistant to general manager of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been announced in these columns, will have supervision over matters of transportation efficiency, particularly with reference to the utilization of equipment, its distribution and proper loading and movement over the road and through terminals. Mr. Riley was born at Cumberland, Ind., on October 1, 1864, and after attending Butler College and Indiana College of Physicians and Surgeons he entered railway service in the operating department of the Cleveland, Cincinnati, Chicago & St. Louis in 1888, remaining in the employ of that company until 1897, when he was appointed superintendent of car service of the Baltimore & Ohio Southwestern at Cincinnati. From 1901 to 1903 Mr. Riley was car service agent of the Chicago Great Western, resigning to accept a similar position with the Erie Railroad, and was later promoted to superintendent of transportation. In 1908 he left the service of the Erie to become superintendent of transportation of the Kansas City Southern, and later became general superintendent of that road, which position he held at the time of his recent appointment as assistant to general manager of the Baltimore & Ohio.

Milton Burnell Murphy, whose appointment as superintendent of the Canadian Northern, with office at Winnipeg, Man., has been announced in these columns, was born September 11, 1866, at Napa, Cal., and received a high school education at Denver, Colo. He began railway work with the Union Pacific at Omaha, Neb., on January 24, 1880, where he was consecutively, until January, 1895, operator, agent, brakeman, conductor, yardmaster, despatcher, chief despatcher, and for a time in charge of construction of the line now known as the Nantaskett branch of that road. He then left railway service to act as county clerk of Carbon county, Wyo., and from March, 1898, to July of the same year was again with the Union Pacific. He was then consecutively in charge of locomotive performance statistics on the Chicago, St. Paul, Minneapolis & Omaha, despatcher of the Eastern Minnesota Railway, despatcher and chief despatcher of the Northern Pacific, despatcher and chief despatcher of the Union Pacific, chief despatcher of the Denver & Rio Grande, and chief despatcher and trainmaster of the El Paso & North Eastern. He was appointed trainmaster of the Mexican Central at Chihuahua, Mex., September 20, 1906, where he remained until January, 1910, and then for four months was general yardmaster of the Chicago Great Western at Omaha. In May, 1910, he was appointed trainmaster of the Second district of the Cana-



M. B. Murphy.

dian Northern at Winnipeg, and during August and September of the same year was acting superintendent. He was made superintendent of the Duluth, Rainy Lake & Winnipeg at Virginia, Minn., on February 27, 1911, which position he held until his promotion to superintendent on December 1, 1911.

Traffic Officers.

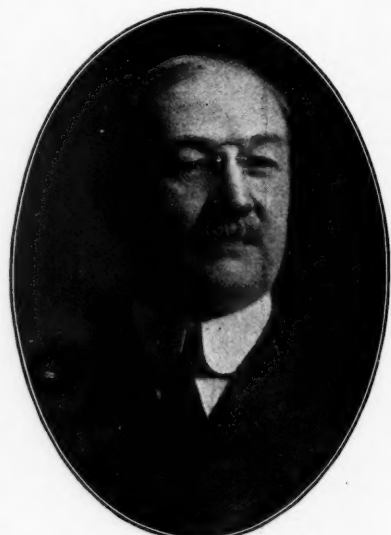
H. R. Jones has been appointed traveling freight agent of the Southern Railway, with office at Jacksonville, Fla.

J. P. Gordon has been appointed general agent of the Duluth, South Shore & Atlantic, with headquarters at Duluth, Minn.

R. V. McCroskey has been appointed traffic manager of the Michigan, Indiana & Illinois Line, with office at Chicago.

Bryan Snyder has been appointed traffic manager of the Marshall & East Texas, with office at Marshall, Tex., succeeding J. I. Hey, resigned.

W. W. Richardson, whose appointment as general passenger agent of the Southwest System of the Pennsylvania Lines West, has been announced in these columns, was born and educated in Cincinnati, Ohio. He began railway work on September 1, 1880, as a clerk in the motive power department of the Pennsylvania Lines at Cincinnati, and later at Indianapolis. He was then chief clerk to the assistant general passenger agent at Chicago. In 1887 he was made chief clerk in the office of the division superintendent at Richmond, Ind., which position he held until 1893, when he again became chief clerk to the assistant general passenger agent at Chicago, where he was located until 1895. From July, 1895, to June 1, 1897, he was traveling passenger agent of the Pennsylvania Lines, with headquarters at Omaha, Neb., and in June, 1892, he was promoted to district passenger agent at Indianapolis. He was appointed assistant general passenger agent at Indianapolis in December, 1903, and was transferred in the same capacity to the general offices at Pittsburgh on March 15, 1910, which position he held at the time of his recent appointment as above noted.



W. W. Richardson.

G. L. A. Thomson, district passenger agent of the Pennsylvania Lines West at Toledo, Ohio, has been appointed district passenger agent, with office at Chicago.

Walter Walthall, city passenger and ticket agent of the Missouri, Kansas & Texas of Texas at San Antonio, has been appointed district passenger agent, with office at San Antonio.

James Maney, assistant general passenger agent of the Duluth, South Shore & Atlantic, has been appointed general passenger agent with headquarters at Duluth, Minn., effective January 1, succeeding Martin Edson.

F. H. Plaisted, assistant general freight agent of the Oregon Short Line at Salt Lake City, Utah, has been appointed assistant to director of traffic of the Harriman Lines, with office at New York City, effective January 1.

A. E. McMaster, agent of Grand Trunk Pacific at Prince Rupert, B. C., has been appointed general agent of the Grand Trunk Pacific, the Grand Trunk Pacific Coast S.S. Co., Ltd., and the Grand Trunk, in charge of passenger and freight traffic in western British Columbia, north of Rivers Inlet, including Queen Charlotte Islands, with office at Prince Rupert, B. C.

W. D. Thomas has been appointed traveling freight agent of the Atchison, Topeka & Santa Fe, with office at St. Louis, Mo.

Edmund R. Gregory, traveling passenger agent of the Coast Lines of the Santa Fe at Long Beach, Cal., has been appointed traveling passenger agent, with headquarters at Los Angeles, Cal., succeeding Harold H. Moore, appointed city passenger and ticket agent at San Diego, Cal. G. A. Hoppe, Jr., succeeds Mr. Gregory.

C. W. Strain, general passenger agent of the St. Louis, San Francisco & Texas, the Fort Worth & Rio Grande, and the Paris & Great Northern at Fort Worth, Texas, has been appointed general passenger agent of the New Orleans, Texas & Mexico, the St. Louis, Brownsville & Mexico, the Beaumont, Sour Lake & Western, and the Orange & Northwestern, with office at Houston, Tex. W. C. Preston, general freight agent of the three first mentioned roads at Fort Worth, has been appointed also general passenger agent, succeeding Mr. Strain. William Doherty, traffic manager of the St. Louis, Brownsville & Mexico at Kingsville, Texas, has been appointed general immigration agent of the four 'Frisco lines in south Texas, with office at Houston.

Engineering and Rolling Stock Officers.

Curtis E. Knickerbocker, chief engineer of the New York, Ontario & Western, at Middletown, N. Y., has resigned.

J. J. McNeill has been appointed supervisor of locomotive operation of the Erie Railroad, with office at Cleveland, Ohio, succeeding D. J. Madden, promoted.

G. E. Sisco, assistant master mechanic of the Pennsylvania Lines West of Pittsburgh, has been appointed assistant engineer of motive power, with office at Columbus, Ohio, succeeding H. S. Needham, transferred.

C. W. Cross, superintendent of apprentices of the New York Central Lines, with office at New York, will report to C. E. Schaff, vice-president of the New York Central Lines, after January 1, and will have his office in the La Salle street station, Chicago. His jurisdiction will extend over the New York Central Lines west of Buffalo only. Henry Gardner, now assistant superintendent of apprentices at New York City, will be in charge of the apprenticeship work on the New York Central & Hudson River, and will report to R. T. Shea, general inspector of piece work.

C. H. Hogan, assistant superintendent of motive power of the New York Central & Hudson River at Albany, N. Y., has been appointed assistant superintendent of motive power of the Eastern district (Hudson, Harlem, N. Y. & P., River, Mohawk and Adirondack divisions) with headquarters at Albany. A. J. Fries, district superintendent at Depew, has been appointed assistant superintendent of motive power of the Western district (Buffalo, Rochester, Western, Ontario, St. Lawrence and Pennsylvania divisions) with headquarters at Depew. L. H. Raymond has been appointed superintendent of shops at West Albany, and H. Wanamaker, general foreman of locomotive department at Depew, has been appointed superintendent of shops at Depew. The positions of district superintendent of motive power, with headquarters at West Albany and Depew, have been discontinued.

Arthur Jung, roadmaster of the Atchison, Topeka & Santa Fe at Ellinwood, Kan., has been appointed roadmaster of the First and Bazar districts of the Middle division, with office at Newton, Kan., succeeding W. F. Muff, resigned, and Joseph Westerhaus has been appointed roadmaster of the McPherson and Little River districts, with office at Ellinwood, succeeding Mr. Jung. C. Kelley has been appointed roadmaster, with office at Guthrie, Okla., succeeding H. S. Cox. E. E. Ball, engineer of construction of the Coast Lines of the Santa Fe at Winslow, Ariz., has been appointed division engineer, with office at Winslow, succeeding D. M. Bunker. John Pullar, division foreman at Los Angeles, Cal., has been appointed master mechanic, with office at Richmond, Cal., succeeding E. H. Harlow, appointed terminal master mechanic of the San Francisco Bay terminals, with office at Richmond. F. W. McNutt, roadmaster at Albuquerque, N. Mex., has been transferred to Gallup, N. Mex. L. B. Parsons, roadmaster at Kingman, Ariz., has been transferred to Barstow, Cal., succeeding B. F. Gauldin, who has been transferred to San Bernardino, Cal., in place of A. Ray, and Mr.

Ray has been appointed roadmaster on the First district of the Los Angeles division, with headquarters at San Bernardino. J. A. Rohrer, roadmaster at Needles, Cal., succeeds Mr. Parsons, with office at Kingman, Ariz.

J. T. Wallace, superintendent of the West Jersey & Sea Shore, has been appointed general superintendent of motive power of the Pennsylvania Railroad, with office at Altoona, Pa., succeeding R. N. Durborow, deceased. H. S. Hayward, superintendent of motive power of the New Jersey division of the Pennsylvania Railroad, at Jersey City, N. J., has been appointed consulting engineer of floating equipment. D. M. Perine, superintendent of motive power at Pittsburgh, Pa., has been transferred to the New Jersey division as superintendent of motive power. J. M. James, master mechanic of the West Philadelphia shops, has been appointed superintendent of motive power of the Western Pennsylvania division, with headquarters at Pittsburgh. J. M. Henry, master mechanic at the Olean (N. Y.) shops, has been appointed master mechanic of the West Philadelphia shops. C. K. Shelby, master mechanic of the Elmira (N. Y.) shops, has been transferred as master mechanic to Olean. W. J. Rusling, general foreman at Enola, Pa., has been appointed master mechanic of the Elmira shops. C. B. Gray, assistant general foreman of the Pitcairn (Pa.) shops, has been appointed general foreman at Enola. C. D. Porter, foreman of the Park shops at Philadelphia, Pa., has been appointed assistant general foreman at Pitcairn, and J. B. Kapp, assistant general foreman of the tank shop at Altoona, has been appointed foreman of the Park shops at Philadelphia.

OBITUARY.

W. H. Greeger, general agent, passenger department of the Chesapeake & Ohio at Washington, D. C., died on December 17, at that place.

James Martin, superintendent of the Pullman Company for the district south of New York and east of the Mississippi river, with headquarters in Philadelphia, Pa., died at Philadelphia on December 27, at the age of 65. Mr. Martin was born in Bedford, Pa., and had been with the Pullman Company for 40 years.

Warren B. Stimson, assistant to general manager of the Grand Rapids & Indiana, at Grand Rapids, Mich., died at that place on December 25. Mr. Stimson was born October 24, 1848, at Copley, Summit Co., Ohio, and began railway work in 1871, as a rodman on the Grand Rapids & Indiana. From 1871 to 1876 he was assistant engineer of the same road and then for two years was assistant engineer on the Kansas City extension of the Chicago & Alton. From 1878 to 1880 he was division engineer of the Council Bluffs extension of the Wabash, St. Louis & Pacific, and then for three years was assistant engineer on the Grand Rapids & Indiana. He went to the Marquette & Western in 1883 as resident engineer and the following year returned to the service of the Grand Rapids & Indiana as roadmaster. In 1890 he was appointed superintendent of the Northern division and was later made assistant to the general manager of that company.

Last spring and summer terrible stories were told in the Russian papers of the condition of things on the new railway which the government is building down the Amur river: there were obstacles which it was next to impossible to overcome; the men employed were cheated and were mutinous; and men in control were making a gigantic job of it. A few months ago the minister of transportation went on a journey of inspection to see for himself. He telegraphed to the Czar September 24 that work had gone on satisfactorily, that in addition to the 125 miles opened last year some hundreds more will be opened early next year, including three branch lines; that 40,000 laborers from all parts of Russia, besides 6,000 prisoners, were employed on the work; that they were generally properly cared for and satisfied, being able to save \$50 to \$60 a year out of their wages; that some 2,000 little settlements had been made along the line; and that in the more unfavorable sections cattle could be raised, and dairies established. He also reports that the engineers have overcome incredible difficulties, among thickets and swamps.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

THE ABILENE & SOUTHERN has ordered one locomotive.

THE GRAND TRUNK will build 30 locomotives in its own shops.

THE CHICAGO, BURLINGTON & QUINCY has ordered 25 locomotives from the Baldwin Locomotive Works.

THE WESTERN MARYLAND is preparing specifications for 10 Pacific type locomotives and 15 consolidation locomotives.

THE MAINE CENTRAL has ordered two six-wheel switching locomotives, seven consolidation locomotives and two Pacific type locomotives from the American Locomotive Company. The switching locomotive will have 20-in. x 26-in. cylinders, 51-in. driving wheels, and in working order will weigh 135,000 lbs. The consolidation locomotives will have 23-in. x 28-in. cylinders, 63-in. driving wheels, will be equipped with superheaters and in working order will weigh 201,000 lbs. The Pacific type locomotives will be equipped with superheaters, will have 22-in. x 28-in. cylinders, 73-in. driving wheels, and in working order will weigh 228,000 lbs.

CAR BUILDING.

THE CENTRAL VERMONT is figuring on new car equipment to be ordered early in the year.

THE MISSOURI PACIFIC has ordered 500 box cars from the Standard Steel Car Company.

THE GREAT NORTHERN has ordered 1,500 refrigerator cars from the Haskell & Barker Car Company.

THE WOODWARD IRON COMPANY, Birmingham, Ala., has ordered 100 freight cars from the Pressed Steel Car Company.

THE CHESAPEAKE & OHIO has ordered 200 steel underframe flat cars from the American Car & Foundry Company.

THE GRAND TRUNK PACIFIC has ordered 300 Hart convertible, steel underframe cars from the Hart-Otis Car Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 1,500 gondola cars from the American Car & Foundry Company, and 1,000 gondola cars from the Pressed Steel Car Company.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE is said to have ordered 300 refrigerator cars from the American Car & Foundry Company. This item has not been confirmed.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 2,500 box cars and 500 furniture cars from the Pullman Company; 200 ballast cars from the Rodger Ballast Car Company. This road is now negotiating for 700 hopper cars.

THE WESTERN MARYLAND is preparing specifications for 2 all-steel 50-ft. mail cars, 10 steel underframe 60-ft. baggage cars, 18 steel underframe coaches, 2 steel underframe combination mail and express cars, 2 steel underframe dining and club cars, 500 50-ton all-steel hopper cars, 500 40-ton steel underframe box cars, 500 all-steel 50-ton, drop-bottom, gondola cars, and 1,000 drop end, drop bottom, 50-ton, steel underframe gondola cars.

IRON AND STEEL.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 10,000 tons of open hearth rails from the Tennessee Coal, Iron & Railroad Company.

THE BALTIMORE & OHIO has ordered about 40,000 tons of rails, of which 7,000 were placed with the Illinois Steel, 17,000 with the Carnegie Steel Company, and a part with the Pennsylvania Steel Company.

GENERAL CONDITIONS IN STEEL.—The steel industry has shown a marked improvement during the past week. The Steel Corporation is receiving new business on a larger scale and is now operating at about 80 per cent. of its capacity. Prices have been increased slightly and a further and more radical increase is expected shortly. Inquiries for structural steel have shown a particularly large increase during the week, and they are expected to develop into orders immediately. It is believed that the Steel Corporation will increase its operations to 85 per cent. of capacity within the next two weeks.

Supply Trade News.

The Pressed Steel Car Company, Pittsburgh, Pa., has removed its office from St. Louis, Mo., to the Old Colony building, Chicago.

W. J. Bixby, who has been appointed a receiver of the Wabash, has resigned his position as a director of the American Car & Foundry Company, New York.

James Martin, superintendent of the Pullman Company, Chicago, with office in Philadelphia, Pa., died at his home on December 27, at the age of 65.

A. W. Heinle, engineer in charge of rail manufacture, rail joint construction and rolled track equipment, has resigned from the Heinle Company of Pittsburgh, Pa.

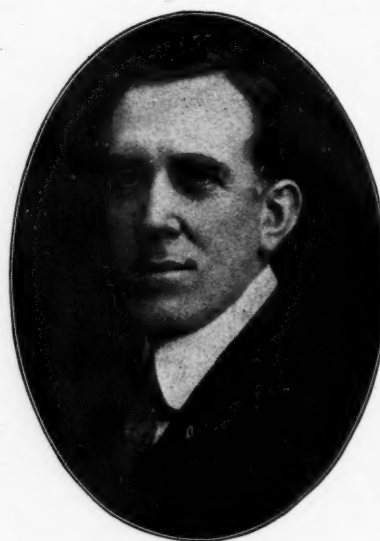
H. M. Percy, for several years mechanical engineer of the Joliet Railway Supply Company, Joliet, Ill., is now in the sales department of the Chicago Car Door Company, Chicago.

William H. Connell, Jr., mechanical engineer, has been made manager of the new office of Hilles & Jones Company, Wilmington, Del., in the Henry W. Oliver building, Pittsburgh, Pa.

G. H. Macdonough, superintendent of construction for the General Railway Signal Company, Rochester, N. Y., with office at Chicago, has been made general manager of the Potter-Winslow Company, Chicago, effective January 1, 1912.

The Julius Pintsch Aktiengesellschaft advises that the Prussian Minister of Public Works has denied a report published in various European papers to the effect that, by action of the Reichstag, at Berlin, the Prussian state railways were to be equipped with electric light.

W. E. Sharp, general superintendent of shops for the Armour Car Lines, Chicago, has resigned to become vice-president and general manager of the Grip Nut Company, Chicago.



W. E. Sharp.

Mr. Sharp began railway work in April, 1890, as a laborer in the car shops of the Erie at Huntington, Ind. He advanced rapidly through the locomotive and car department until 1898, when he resigned as division foreman of the locomotive and car department to become assistant shop superintendent for the Armour Car Lines. In 1900 he was promoted to shop superintendent, and later to general superintendent of shops. He will retain his connection with the Armour Car Lines as consulting engineer. Mr. Sharp took an active part in the formation of the Car Foremen's Association of Chicago, is a member of the Master Car Builders' Association, worked on various committees, and was president of the Western Railway Club 1909-1910.

C. B. Flint, manager of the supply department of Manning, Maxwell & Moore, New York, has resigned to become president of Flint & Chester, Inc., 237 Lafayette street, New York. This firm was formed to carry on business in railway, machinists' and contractors' supplies.

The Baldwin Locomotive Works, Philadelphia, Pa., whose reorganization was described in the *Railway Age Gazette* of June 30, has declared initial semi-annual dividends of 3½ per cent. and 1 per cent. on its \$20,000,000 preferred stock and \$20,000,000 common stock, respectively. The preferred stock has recently been listed on the New York Stock Exchange. The Baldwin Locomotive Works is now negotiating for some land near Chicago for the erection of a western plant.

The Chicago Railway Signal Supply Company, Carpentersville, Ill., has been incorporated in Illinois with \$10,000 capital stock, to make and deal in railway signal apparatus. The incorporators are: John F. Furek, Howard C. McNeil and Howard C. Griffiths.

The Jerome Metallic Packing Company, Chicago, has moved its main offices to the Railway Exchange, where larger floor space has been secured. William H. Dickinson, for 14 years connected with the Griffin Wheel Company, Chicago, has gone to the Jerome company, with especial charge of the sales department. The company has secured the sole rights of manufacture and sale of the Stickley pneumatic track sander and will also handle the product of the Ruby Manufacturing Company, Jackson, Mich., consisting of portable galvanized sectional steel buildings, sectional steel bill-boards, bulletins and signs for railway right of way.

TRADE PUBLICATIONS.

STAYBOLTS.—The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, has issued a small folder called Boiler Construction Repairs Inspection, giving seven reasons why hollow staybolts should be used in the construction and repair of boilers.

MANGANESE STEEL GEARS.—The Taylor Iron & Steel Company, High Bridge, N. J., has issued bulletin 100-B illustrating and describing Tisco manganese steel gears and pinions and bulletin 113 illustrating and describing the company's manganese steel chains and sprockets. Both bulletins give complete lists of sizes and prices.

BIRD NEPONSET PRODUCTS.—F. W. Bird & Son, East Walpole, Mass., has published a 100-page booklet giving full specifications for waterproofing, building insulation and roofing. The booklet explains clearly and concisely the uses of prepared roofings, felts and waterproof papers in various types of buildings and cold storage work. It also discusses waterproofing problems connected with bridge, tunnel and foundation construction. The use of Bird Neponset products is repeatedly advised, but the specifications are designed to be applied equally well to other products.

CONCRETE.—The Vulcanite Portland Cement Company, Philadelphia, Pa., has published, in pamphlet No. 6, an article on Selection and Preparation of Aggregates for Concrete, by Albert Moyer, Assoc. Am. Soc. C. E. The object of this article is to give a practical method which will enable any plain concrete constructor to make economical use of the best aggregates when proportioning as to give the maximum strength and density with a minimum amount of cement. The laboratory method of obtaining the correct proportion of Portland cement to sand or stone screenings for mortar is given, together with a description of slow-setting, rapid-hardening Portland cement, and the advantages of the Vulcanite brand.

PLANERS.—Joseph T. Ryerson & Son have issued a catalog on Rockford Planers, which include heavy duty, variable speed and motor drive planers. The requirements for modern planers are well stated as follows: With the present use of high speed steels, the limit is only one of efficiency; that is, speed is secured without waste of power, injury to mechanism of planer or sacrificing the quality of the planer's work. Consequently, today, planer speed is not limited by cutting speed alone, nor by cutting and return speeds, but by the time taken in the full cycle, of which a strong, steady forward stroke, a swift, efficient, return stroke, and an ability to reverse promptly and smoothly are important elements. In producing this planer the aim has been to meet all these problems, and the fact has been kept in mind that weight and power, properly distributed and backed by good workmanship, are the factors that determine the efficiency of machines of this class. The motor and variable speed drive are arranged very compactly and placed on top of the housings. The usual cutting speeds are 21, 29, 38 and 47 ft. per minute with a constant return speed of 90 ft. per minute. This catalog is one of the units of a large machine tool catalog the Ryerson company is now preparing.

During the fiscal year of 1911, 314 miles of line were added to the Central Railway of Argentina, and 34 new stations were opened. A proposal to construct further new extensions to the extent of 1,000 miles of line has recently been given official sanction.

Railway Construction.

New Incorporations, Surveys, Etc.

ANACONDA & PACIFIC.—An officer writes that plans have been made to build from Browns, Mont., to Georgetown, 16 miles. The line is being built to carry ore and lumber. It is undecided when contracts for the work will be let. J. G. Ryan, president; C. A. Lemon, chief engineer, Anaconda, Mont.

ATCHISON, TOPEKA & SANTA FE.—The California, Arizona & Santa Fe has been organized in California with \$50,000,000 capital by the A. T. & S. F., it is said, to take over the leased lines in Arizona and the main line of the Santa Fe from Needles, Cal., to Mojave, which are to be organized into one company. The plans include building other lines in southern California and Arizona.

BOSTON & EASTERN (Electric).—This company expects to begin construction work on a high speed interurban line between Boston, Mass., and Danvers, as soon as the question of securing the right of way through the city of Lynn can be settled. It is understood that New York and Boston interests will finance the project. Arthur Sturges, 110 State street, Boston, may be addressed. (June 30, p. 1713.)

CALIFORNIA, ARIZONA & SANTA FE.—See Atchison, Topeka & Santa Fe.

CHESAPEAKE & OHIO.—According to press reports this company has arranged to start work soon on a 25-mile branch from Harold, Ky., via Beaver Creek to a coal and timber district at the border of Letcher and Knot counties.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Surveys are being made for a line from Pendleton, Ind., to the corporate lines of Anderson, about 8 miles. Geo. P. Smith, chief engineer, Cincinnati, Ohio.

DAKOTA TRANSPORTATION COMPANY.—This company has been organized in South Dakota with \$500,000 capital and headquarters at Ottawa, Ont. The plans call for building a system of lines in North Dakota with short sections through South Dakota. The incorporators include J. N. Ponby, E. E. Gognan, L. F. Askwith and H. Despardend, all of Ottawa.

DAVENPORT, IOWA CITY & WESTERN TRACTION.—Incorporated in South Dakota with \$1,600,000 capital and headquarters at Pierre, S. D. The plans call for building a line from Davenport, Iowa, to Iowa City, with a branch to Tipton, in all about 70 miles. It is estimated that it will cost \$30,000 a mile to build the line. The directors include C. E. Coon, Omaha, Neb.; S. Bradley and G. W. Koontz, Iowa City, Iowa, and T. Todd, Springdale, Iowa.

GREAT NORTHERN.—An officer writes that a contract has been given to the Siems-Currie Company, St. Paul, Minn., for work between Lewiston, Mont., and Moccasin. A. H. Hogeland, chief engineer, St. Paul.

KANSAS CITY, MEXICO & ORIENT.—An official is quoted as saying that this company has on hand construction funds sufficient to carry all work forward to Alpine, Tex. Construction work on the southwestern end is proceeding at an average of five miles a week. Pecos river will be reached by the first of the year, and Fort Stockton, 35 miles additional, will be reached by the middle of February. It is expected that the work to Alpine, 95 miles from Pecos river, will be completed by July, 1912.

LOUISVILLE & NASHVILLE.—According to press reports this company is planning to spend a large amount of money enlarging its yard at Montgomery, Ala., and double tracking between Montgomery and Calera.

NACAZARI RAILROAD.—It is announced that the Phelps-Dodge interests which own this railway will extend the line from Nacozari, Sonora, Mex., south to the Promontorio mines, about 75 miles.

NEVADA ROAD.—The Giroux Consolidated Mining Company of Ely, Nev., is said to have started work on a line from Morris Mine to Kimberly. T. F. Cole is president.

NORFOLK & WESTERN.—An officer writes that work is now under way on the Dry Fork branch and connections, from Cranebrake,

W. Va., to Cedar Bluff, 14.70 miles, and on the Norfolk branch from Jeanette 4.31 miles.

PACIFIC GREAT WESTERN.—An officer writes that a contract has been given to MacArthur, Perks Company, Ltd., of Chicago and New York, to build from Eugene, Ore., west via Elmira, Walton, Glentina, Lake creek and Mapleton to Glenada, 73 miles, then south along the Pacific coast to Coos Bay, 42 miles; maximum grades will be .7 per cent., maximum curvatures 6 deg. There will be a steel bridge with a 300 ft. draw, also 4,000 ft. of trestle work and 3,050 ft. of tunnel work. In addition there will be five bridges each 160 ft. long, and ten bridges each 60 ft. long. The line expects to develop a traffic in lumber, general merchandise, farm products and coal. R. B. Hunt, chief engineer, Eugene.

SACRAMENTO VALLEY WESTSIDE (Electric).—A survey has been made, it is said, from Woodland, Cal., to Red Bluff, about 140 miles, by the Dozier Engineering & Contracting Company, Sacramento. The railway company has been granted franchises in Yolo and Glenn counties. C. L. Donohue is president.

ST. JOHN VALLEY.—A contract for building from Grand Falls, New Brunswick, via Centreville, Lakeville, Woodstock and Fredericton to St. John, 208 miles, has been signed, and the location survey is now being made. The St. John & Quebec Railway Company has undertaken the work. F. J. Lisman, New York, is making financial arrangements. The provincial government of New Brunswick guarantee bonds to the extent of \$25,000 a mile, and the dominion government grants \$6,400 a mile additional. On completion the line is to be taken over by the federal government and operated as a part of the Intercolonial. There will be three large bridges on the line over the St. John River below Grand Falls on the lower reaches at the Mistake and across the Kennebecasis at Perry's Point. The three bridges will cost about \$1,250,000. The grade between St. John and Fredericton is not to exceed .4 of 1 per cent. going east, and .6 of 1 per cent. going west, and between Fredericton and Grand Falls it is not to exceed 1 per cent.

ST. JOHN & QUEBEC.—See St. John Valley.

SOUTHERN PACIFIC.—It is understood that this company will complete the Cochise branch in Arizona to Douglas, and will extend the line south to Cumpas in the near future. The grade between Nacozari and Cumpas, about 50 miles, is finished, and it will not take long to complete the line. A branch of the Southern Pacific of Mexico, which is finished from Corral, Sonora, to Tonichi, will also be extended north to Cumpas, about 60 miles. The mines of the Transvaal Copper Company are about 20 miles to the east and that company will connect its works with the Southern Pacific by building a narrow gage line.

TEXAS ROADS.—E. H. Robinson, formerly of Huntsville, Texas, is said to be back of a project to build a 50-mile line from Huntsville west.

RAILWAY STRUCTURES.

CALGARY, ALBERTA.—The Canadian Pacific is reported to have let a contract to W. K. Kenly & Company for the construction of large shops.

CHICAGO, ILL.—The Pennsylvania Lines are reported to be considering the location of yards and shops near Chicago.

DENVER, COLO.—The executive officers of the principal railways entering Denver held a conference at Chicago last week regarding plans for a new passenger terminal in Denver, but the final decision was postponed for other meetings.

EUGENE, ORE.—See Pacific Great Western under Railway Construction.

GLADWIN, MICH.—The Michigan Central proposes to build a new passenger station.

HELENA, MONT.—The Great Northern has made plans, it is said, for building a new station at Helena, to cost \$100,000.

LEWISTON, MONT.—The Great Northern will soon commence work, it is said, on the construction of a bridge over the Judith river near Lewiston. The bridge is to be about 1,400 ft. long, 110 ft. high, and is estimated to cost \$250,000.

Railway Financial News.

ATLANTIC COAST LINE OF CONNECTICUT.—This company, which owns the majority of the stock of the Atlantic Coast Line Railroad, has declared a quarterly dividend of 3 per cent., which places its stock on a 12 per cent. annual dividend basis as compared with a 10 per cent. rate declared heretofore. The Atlantic Coast Line Railroad recently increased its annual rate from 6 per cent. to 7 per cent.

KANSAS CITY, MEXICO & ORIENT.—This company has funds sufficient to carry on its work to Alpine, 65 miles southwest of Fort Stockton, but, it is said, will probably offer for sale a block of the recently authorized issue of \$20,000,000 first mortgage 4 per cent. bonds.

See this company under Railway Construction.

KENT NORTHERN.—A published report says that this company's line of 27 miles running from Richibucto to Kent Junction, connecting with the Intercolonial, has been sold to Toronto parties for \$100,000. Road was built thirty years ago by John C. Brown, who sold to Richibucto syndicate eight years ago for \$60,000, the earnings since that time having been spent in improving its condition. Thomas O. Murray, manager and a member of the syndicate, will continue as manager under the new ownership.

NEW YORK CENTRAL & HUDSON RIVER.—This company has sent out to the holders of its Lake Shore 3½ per cent. collateral trust bonds a letter asking them to consent to the consolidation of the New York Central & Hudson River and the Lake Shore & Michigan Southern. The company plans to get the consent of 75 per cent. of the bondholders. A letter was also sent to holders of the Michigan Central 3½ per cent. collateral trust bonds asking for consent to possible future consolidation of the Michigan Central with the New York Central & Hudson River. The indenture securing the Lake Shore collateral bonds provides that the Lake Shore and the N. Y. C. & H. R. can only be consolidated with the consent of 75 per cent. of the Lake Shore collateral bondholders, and provides that if the consolidation takes place and the Lake Shore's stock is canceled, a mortgage on the New York Central & Hudson River itself shall be executed for \$100,000,000. There are outstanding \$90,578,400 Lake Shore collateral bonds and \$19,336,445 Michigan Central collateral bonds.

J. P. Morgan & Co., the First National Bank and the National City Bank, all of New York, are offering the \$15,000,000 New York Central Lines equipment trust certificates of 1912, which, as mentioned last week, were authorized by the New York Public Service Commission, at prices to yield approximately 4.46 per cent.

NORFOLK SOUTHERN.—This company has bought the Raleigh & Southport, running from Raleigh, N. C., to Fayetteville, 64 miles; the Durham & Charlotte, running from Troy to Colon, 50 miles; and the Aberdeen & Ashboro, running from Aberdeen to Ashboro, 57 miles.

WABASH.—The installment of this company's 4½ per cent. equipment bonds maturing January 1, 1912, amounting to \$309,000, is to be paid by Lee, Higginson & Co., Boston, and the same bankers will also pay the interest on the \$3,090,000 of these bonds remaining outstanding.

The technical section of the Russian department for the construction of railways has now finished its study of the preliminary project of a tunnel under the Amur at the town of Chabarovsk for the junction of the Amur railway, now being built, with the Ussrisk railway. It had been originally intended to cross the Amur river by a bridge 42 ft. above water level in the river in order to accommodate the boating traffic. But as the cost of such a bridge with open arches was placed at something like \$9,000,000, the idea took root of seeking a way past the river underground. The first project of a tunnel was similar to the plan of the Detroit river tunnel. But in view of the novelty of such operations in Russia and the extreme importance of an efficient crossing for the Amur railway in one way or another, the minister of ways of communication thought it wise to call together a special committee of authorities to examine the question.

